Patent Application Transmittal

(only for new nonprovisional applications under 37 C.F.R. 1.53(b))

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Date: July 15, 1998
Attorney Docket No.: 450100-4521

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Sir:

With reference to the filing in the United States Patent and Trademark Office of an application for patent in the name(s) of:

Yasutomo NISHINA, Tomoyuki HANAI, Tomoko TERAKADO

entitled:
TRANSMITTER SYSTEM AND TRANSMITTING METHOD, RECEIVER SYSTEM AND RECEIVING METHOD AND TRANSMISSION MEDIA

The following are enclosed:

- X Specification (36 pages)
- X 35 Sheet(s) of Drawings
- X 15 Claim(s) (including 6 independent claim(s))
- ___ This application contains a multiple dependent claim

- X Our check for $ 1,036.00, calculated on the basis of the claims as amended by any enclosed preliminary amendment as follows:

Basic Fee, $790.00 ($395.00)	$ 790.00
Number of Claims in excess of 20 at $22.00 ($11.00) each:	-0-
Number of Independent Claims in excess of 3 at $82.00 ($41.00) each: 3	246.00
Multiple Dependent Claim Fee at $270.00 ($135.00)	-0-
Total Filing Fee	$ 1,036.00
___ Assignment Recording Fee $40.00	-0-

- X Oath or Declaration and Power of Attorney
  - X New ___ signed X unsigned
  - ___ Copy from a prior application (37 C.F.R. 1.63(d))

- X Certified copy of each of the following application(s) to substantiate the claim(s) for priority made in the Declaration:

Application No.	Filed	In
9-193725	18 July 1997	Japan

Please charge any additional fees required for the filing of this application or credit any overpayment to Deposit Account No. 50-0320.

Respectfully submitted,

FROMMER LAWRENCE & HAUG LLP
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By _____
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July 15, 1998

Assistant Commissioner for Patents
Washington, D.C. 20231

Re: U.S. Patent Application
Applicants: Yasutomo NISHINA, Tomoyuki HANAI, Tomoko TERAKADO
Our Ref.: 450100-4521

Dear Sir:

Enclosed are papers constituting the above patent application which is being filed under 37 C.F.R. 1.53 without a signed Declaration. Please accord a filing date and a serial number to such application and inform the undersigned thereof so that a signed Declaration and the surcharge required by 37 C.F.R. 1.16(e) may be duly filed.

Please address all correspondence to:

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Respectfully,

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Enclosures

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450100-4521

"Express Mail" mailing label number EL026260904US

Date of Deposit July 15, 1998

I hereby certify that this paper or fee, and a patent application and accompanying papers, are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and are addressed to the Assistant Commissioner for Patents, Washington, DC 20231.

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PATENT
450100-4521

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR LETTERS PATENT

TITLE: TRANSMITTER SYSTEM AND TRANSMITTING METHOD, RECEIVER SYSTEM AND RECEIVING METHOD AND TRANSMISSION MEDIA

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TRANSMITTER SYSTEM AND TRANSMITTING METHOD, RECEIVER SYSTEM AND RECEIVING METHOD AND TRANSMISSION MEDIA

BACKGROUND OF THE INVENTION

The present invention relates to a transmitter system and a transmitting method, a receiver system and a receiving method and transmission media and more particularly to a transmitter system and a transmitting method, a receiver system and a receiving method and transmission media which are arranged so as to separately transmit/receive information concerning on contents of a program and information concerning on display and control of the program to be able to process the information efficiently.

The conventional EPG (Electronic Program Guide) system is roughly categorized into two systems of sending program information by adding to digital broadcasting or analog broadcasting to be transmitted and of sending the program information via a transmission path such as Internet different from the route of the broadcasting to be transmitted. The program information is displayed by an application program provided in the receiver side in advance in the former system. Meanwhile, a user is allowed to see the program information by using a predetermined browser in the latter system because the program information is

described by a description language such as HTML (Hyper Text Markup Language).

However, the former system allows to handle only information which can be displayed by the limited application of the receiver. Further, it transmits the information giving no consideration to cases of changing display of the information and of displaying the EPG in equipments having different processibility.

Meanwhile, although the latter system provides a high degree of freedom in display because it transmits the information described mainly in the description language such as HTML, it gives no consideration to editing and diversion of the program information. It also has another problem that because it requires transmission information per each screen, an amount of the transmission information increases. In connection with this, the present applicant has proposed a method of hierarchizing information and of transmitting only necessary information in Japanese Patent Application No. Hei. 8-270916.

Thus, the prior art EPG system has had a problem that the transmission of the EPG information is not processed appropriately giving consideration to the case when the same program is broadcasted by different broadcasting stations and different time as often seen in local districts and minor stations.

The prior art EPG system has had another problem that the transmission of the EPG information is not processed appropriately giving consideration to the case when the program is delayed or postponed by some reason.

The prior art EPG system has had a still other problem that the transmission of the EPG information is not processed appropriately giving consideration to the degree of freedom in changing the display format and the layout on the receiver side.

SUMMARY OF THE INVENTION

In view of the above-mentioned problems, the present invention is intended to allow information to be processed efficiently by separately transmitting information and information for displaying or controlling that information.

A transmitter system as described in Claim 1 comprises generating means for generating second information and third information concerning on a layout in displaying the second information and transmitting means for transmitting the second information and the third information; wherein the generating means composes the second information and the third information of a first part including identification information for identifying the second information and the third information and a second part composed of actual data.

A receiver system as described in Claim 4 comprises receiving means for receiving the second information and the

third information concerning on the layout in displaying the second information and generating means for generating fourth information for displaying the second information from the second information and the third information.

A transmitting method as described in Claim 8 comprises steps of generating the second information and the third information concerning on the layout in displaying the second information and transmitting the second information and the third information; wherein the generating step composes the second information and the third information of the first part including identification information for identifying the second information and the third information and the second part composed of actual data.

A receiving method as described Claim 9 comprises steps of receiving the second information and the third information concerning on the layout in displaying the second information and generating fourth information for displaying the second information from the second information and the third information.

A transmission medium as described in Claim 10 transmits a computer program comprising steps of generating the second information and the third information concerning on the layout in displaying the second information and transmitting the second information and the third information; wherein the generating step composes the second

information and the third information of the first part including identification information for identifying the second information and the third information and the second part composed of actual data.

A transmission medium as described in Claim 11 receives a computer program comprising steps of receiving the second information and the third information concerning on the layout in displaying the second information; and generating fourth information for displaying the second information from the second information and the third information.

In the transmitter system described in Claim 1 and the transmitting method described in Claim 8, the second information and the third information concerning on the layout in displaying the second information are generated and the second information and the third information are composed of the first part including identification information for identifying the second information and the third information and the second part composed of actual data in transmitting the second information and the third information.

In the receiver system described in Claim 4 and the receiving method described in Claim 9, the second information and the third information concerning on the layout in displaying the second information are received and the fourth information for displaying the second information

is generated from the second information and the third information.

The transmission medium described in Claim 10 transmits the computer program generating the second information and third information concerning on the layout in displaying the second information; and composing the second information and the third information of the first part including identification information for identifying the second information and the third information and the second part composed of actual data in transmitting the second information and the third information.

The transmission medium as described in Claim 11 transmits the computer program receiving the second information and third information concerning on the layout in displaying the second information and generating fourth information for displaying the second information from the second information and the third information.

The specific nature of the invention, as well as other objects, uses and advantages thereof, will clearly appear from the following description and from the accompanying drawings in which like numerals refer to like parts.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a block diagram showing a structural example of one embodiment of a transmitter section of an EPG data

management system of a digital TV to which the present invention has been applied;

FIG. 2 is a block diagram showing a structural example of one embodiment of a receiver section of the EPG data management system of the digital TV to which the present invention has been applied;

FIG. 3 is a diagrammatic view of the transmitter section and the receiver section shown in FIGs. 1 and 2;

FIG. 4 is a diagram showing flows of data between the transmitter section and the receiver section shown in FIGs. 1 and 2;

FIG. 5 is a flowchart explaining the operation of the transmitter section shown in FIG. 1;

FIG. 6 is a flowchart explaining the operation of the receiver section shown in FIG. 2;

FIG. 7 is a flowchart explaining procedural steps of a displaying process;

FIG. 8 shows an exemplary display screen;

FIG. 9 shows another exemplary display screen;

FIG. 10 shows a still other exemplary display screen;

FIG. 11 is a flowchart explaining procedural steps of a retrieving process;

FIG. 12 shows an exemplary display screen;

FIG. 13 shows an exemplary display screen;

FIG. 14 shows an exemplary display screen;

FIG. 15 shows an exemplary display screen;

FIG. 16 shows an exemplary structure of EPG data;

FIG. 17 shows an exemplary display screen;

FIG. 18 shows an exemplary display screen;

FIG. 19 shows an exemplary display screen;

FIG. 20 is a flowchart for explaining procedural steps for creating screen display information;

FIG. 21 shows an exemplary format of the EPG data;

FIG. 22 is a table showing types of element_block;

FIG. 23 is a table showing event_data_element_blocks;

FIG. 24 is a table showing formats of event_data_element;

FIG. 25 is a table showing channel_data_element_blocks;

FIG. 26 is a table showing formats of channel_data_element;

FIG. 27 is a table showing character_data_element_blocks;

FIG. 28 is a table showing formats of character_data_element;

FIG. 29 is a table showing text_data_element_blocks;

FIG. 30 is a table showing picture_data_element_blocks;

FIG. 31 is a table showing sound_data_element_blocks;

FIG. 32 is a table showing movie_data_element_blocks;

FIG. 33 shows an exemplary display screen;

FIG. 34 is a table showing layout_element_blocks;

FIG. 35 is a table showing EPG_contents_data;

FIG. 36 is a table showing EPG_contents_data;

FIG. 37 is a table showing EPG_contents_data;

FIG. 38 is a table showing EPG_contents_data; and

FIG. 39 is a table showing EPG_management_data.

DESCRIPTION OF PREFERRED EMBODIMENT

FIG. 1 is a block diagram showing a structural example of one embodiment of a transmitter section (broadcasting station) of an EPG data management system for a digital TV (television) to which the present invention has been applied. A program production 1 supplies information such as program information and program management information for managing the transmission of the program to a main system processor 2. Among the information supplied from the program production 1, the main system processor 2 supplies video, voice and others to an encoder 3 and the program management information to a programming system processor 4, an operation system processor 5 and an EPG system processor 6 as necessary.

An EPG data provider 7 supplies program guide information to an EPG data editor 8. The EPG data editor 8 manages the information sent from the EPG data provider 7 by categorizing per each type thereof and supplies it to the EPG system processor 6 appropriately as EPG transmitting data. The EPG system processor 6 supplies the information

from the EPG data editor 8 to a multiplexer 9. The multiplexer 9 multiplexes the data of video and voice supplied from the encoder 3 and the data such as the program guide information supplied from the EPG system processor 6 and transmits such data to a receiver section.

FIG. 2 is a block diagram showing a structural example of one embodiment of the receiver section (receiver) of the EPG data management system for digital TV (television) to which the present invention has been applied. A front-end 11 composing the receiver section receives the data transmitted from the multiplexer 9 in the transmitter section shown in FIG. 1 and supplies it to a de-multiplexer 12. The de-multiplexer 12 de-multiplexes the multiplexed data supplied from the front-end 11. Among the de-multiplexed data, the de-multiplexer 12 supplies the data of video and voice to a decoder 13, the transmission management information of the program such as program management information to a main processor 14 and the EPG related information to an EPG data management engine 16.

After decoding the data of video and voice supplied from the de-multiplexer 12, the decoder 13 supplies it to a display processor 17. Among the program management information supplied from the de-multiplexer 12, the main processor 14 supplies information related to display to the display processor 17. The EPG data management engine 16

supplies predetermined one among the data supplied from the de-multiplexer 12 to an EPG data memory 18 as necessary to store therein. The EPG data management engine 16 also combines the data supplied from the de-multiplexer 12 with the data stored in the EPG data memory 18 to supply to the display processor 17 as display information.

The display processor 17 outputs video signals corresponding to the data supplied from the decoder 13, the main processor 14 and the EPG data management engine 16 to display on a predetermined screen.

FIG. 3 is a conceptual diagram in transmitting the data from the transmitter section to the receiver section.

Information related to a program can be obtained from a plurality of EPG data providers such as an EPG data provider 7-1 (EPG Data Provider_0), an EPG data provider 7-2 (EPG Data Provider_1) and an EPG data provider 7-3 (EPG Data Provider_2). The obtained information is supplied to the EPG data editor 8. The EPG data supplied to the EPG data editor 8 is edited and managed by the EPG data editor 8. The edited information is supplied and recorded as EPG information in a fixed medium such as a CD-ROM (compact disc-read only memory) and a DVD (digital versatile disc).

After being supplied to the EPG system processor 6 in the transmitter side as EPG transmission information, the information in the EPG data editor 8 is transmitted to the

receiver side by means of digital broadcasting and the like. Further, the information in the EPG data editor 8 is transmitted to Internet data servers as EPG information and is then transmitted to the receiver side through Internet. The structure of the EPG data will be described later with reference to FIG. 16.

The EPG information (EPG data) transmitted via respective media is supplied to the EPG data management engine 16 on the receiver side. The EPG data management engine 16 supplies the EPG data transmitted from the transmitter side to the EPG data memory 18 as necessary to store therein. Based on the information transmitted and accumulated, the EPG information is transmitted to and displayed on TVs, PDAs (personal digital assistants) and PCs (personal computers) as EPG display information.

FIG. 4 shows flows of the data when transmitted from the transmitter section to the receiver section. The information related to the EPG is categorized roughly into program related information and display related information. The program related information is composed of event data showing a duration and a broadcasting channel of the program to be broadcasted, a title of the program and the like, character data showing information on cast and the like of the program, channel data showing data of the broadcasting station such as a station icon and the name of the

broadcasting station, CM data showing CM related information, and the like.

Meanwhile, the display related information is composed of layout data showing a layout of the EPG display screen, font data showing data of fonts to be displayed, color data showing colors to be displayed, operation data describing manipulation the screen, and the like.

The EPG data editor 8 converts the program related information into EPG_contents_data to be transmitted to the receiver side. The EPG data editor 8 also converts the display related information into EPG_control_data to be transmitted to the receiver side.

In the receiver side, EPG_management_data which is interim data within the receiver side is generated as necessary from the EPG_contents_data and the EPG_control_data transmitted from the transmitter side. Further, EPG_display_data which is data for display is generated in the receiver side from the EPG_contents_data, the EPG_control_data and the EPG_management_data. This EPG_display_data is supplied to TVs, PDAs, PCs and the like to display the corresponding EPG screen.

Next, the operation of the transmitter section shown in FIG. 1 will be explained with reference to a flowchart in FIG. 5. At first, it is determined whether or not to input program information by the main system processor 2 of the

transmitter section in Step S1. When it is determined to input the program information, the process advances to Step S2 to input data from the EPG data provider 7 and to supply to the EPG data editor 8.

Next, the EPG data editor 8 generates EPG_contents_data in unit of program from program basic information, e.g. a channel, program starting time, a length of the program, the program title and the like in Step S3. Then, the process advances to Step S4 to generate EPG_contents_data in unit of program from program detail information, e.g. the program Sub-title, cast, contents of the program and the like. Next, the EPG_contents_data is generated from the related information, e.g. information on a broadcasting station, cast, CM and the like, in Step S5.

When the process in Step S5 ends or when it is determined in Step S1 not to input the program information, the process advances to Step S6. In Step S6, it is determined whether or not to input display information. When it is determined to input the display information, the process advances to Step S7 to input new layout information from the EPG data provider 7 by the EPG data editor 8. Next, EPG_control_data is generated from the new layout information input in Step S7, i.e. EPG layout (display position, types of items to be displayed, etc.) in Step S8. Next, the EPG_control_data is generated from the

specifications on control in the EPG (position of buttons, behavior when the button is pressed, etc.) in Step S9.

When the process in Step S9 ends or when it is determined not to input the display information in Step S6, the process advances to Step S10. In Step S10, the EPG data editor 8 selects and creates data for CD-ROM/DVD from the EPG_contents_data and the EPG_control_data. In Step S11, the EPG data editor 8 selects and creates data for broadcasting from the EPG_contents_data and the EPG_control_data. In Step S12, the EPG data editor 8 selects and creates data for Internet from the EPG_contents_data and the EPG_control_data. Then, the process ends.

Next, the operation of the receiver section shown in FIG. 2 will be explained with reference to a flowchart in FIG. 6. At first, it is determined in Step S21 whether or not to receive the program information transmitted from the transmitter section shown in FIG. 1 by the main processor 14 in the receiver section. When it is determined to receive the program information, the process advances to Step S22 to receive the program information by the front-end 11. The program information received by the front-end 11 is de-multiplexed by the de-multiplexer 12 and is supplied to the main processor 14. When the information supplied to the main processor 14 is basic information of the

EPG_contents_data, it is supplied and stored in the internal memory (EPG data memory) 18 within the receiver section via the EPG data management engine 16.

When the information supplied to the main processor 14 is detail information of the EPG_contents_data, only information related to the present EPG screen is supplied to and stored in the EPG data memory 18 within the receiver section via the EPG data management engine 16 in Step S23.

When the information supplied to the main processor 14 is the EPG_control_data, it is supplied to and stored in the EPG data memory 18 within the receiver section via the EPG data management engine 16 in Step S24.

When the information supplied to the main processor 14 is updated information of the information already received, information stored in the EPG data memory 18 within the receiver section is updated in Step S25.

Next, the EPG_management_data is generated as necessary in Step S26.

When the process in Step S26 ends or when it is determined not to receive the program information in Step S21, the process advances to Step S27 to determine whether or not to execute display of EPG. When it is determined to execute the EPG display, the process advances to Step S28 to generate basic display information from the EPG_control_data. Next, information obtained from the

EPG_management_data on the internal memory 18 is displayed in Step S29.

In Step S30, the EPG_contents_data on the internal memory 18 is displayed based on the EPG_management_data. Then, the process advances to Step S31 to display the EPG_contents_data received and obtained in real-time from the EPG_management_data and the EPG_contents_data on the internal memory 18. When the process in Step S31 ends or when it is determined not to execute the EPG display in Step S27, the process ends.

Next, the procedural steps for displaying the information related to the program will be explained with reference to a flowchart shown in FIG. 7. At first, a frame of the display screen is generated and displayed from EPG_layout_element (main_layout_element, box_layout_element and cell_layout_element described later in FIG. 38) and buttons and others within the screen are generated and displayed from EPG_operation_element (main_operation_element, box_operation_element and cell_operation_element described later in FIG. 38). Thereby, a screen as shown in FIG. 8 is displayed. In case of the exemplary screen, "Main Program Guide" is displayed as the title of the screen and the buttons of "Information", "View", "Rec" and "Return Menu" are displayed.

Next, information concerning on a channel is generated and displayed from the EPG_management_element (main_management_element, box_management_element and cell_management_element described later in FIG. 16), channel_data_element and the like in Step S42. Thereby, the channel No. and the name of respective broadcasting stations are displayed as shown in FIG. 9. In case of the exemplified screen, channel No. 57 (name of broadcasting station: RQ1) and channel No. 60 (name of broadcasting station: RQ2) are displayed.

Next, the process advances to Step S43 to generate and display information concerning on the program from the EPG_management_element, event_data_element and the like. Thereby, information on titles of the programs, cast and the like are displayed per each channel as shown in FIG. 10.

Next, procedural steps in searching and displaying information concerning on a specific character for example will be explained with reference to a flowchart in FIG. 11. At first, the frame of the display screen is generated and displayed from the EPG_layout_element and the buttons and others within the screen are generated and displayed from the EPG_operation_element in Step S51. Thereby, the title of the screen and the buttons are displayed as shown in FIG. 12. In case of the exemplified screen, "Character Select Guide" is displayed as the title of the screen and the

buttons "Search", "Sort", "ABC..." and "Return Menu" are displayed.

Next, information concerning on the cast is generated from the EPG_management_element and displayed in Step S52. Thereby, a list of names of the cast is displayed as shown in FIG. 13. In Step S53, the name of the desired character is displayed on the screen by manipulating a scroll bar as necessary to select on the screen shown in FIG. 13. Thereby, the search for information concerning on the selected character is executed.

Then, the process advances to Step S54 to retrieve an element containing a block of ID of the character. In Step S55, necessary information is taken out of the information of the retrieved element. Then, the frame of the display screen is generated and displayed from the EPG_layout_element and the buttons and others within the screen are generated from the from EPG_operation_element and are displayed on the screen. Thereby, in case of the exemplified screen, "Character Select Guide (Result)" is displayed as the title of the screen and the buttons "Information", "View", "Rec" and "Return Menu" are displayed.

Next, the process advances to Step S57 to find and display information on contents of each item of the display screen from the retrieved element information. Thereby,

information on the character selected in Step S53, i.e. "Kevin Bacon" in this case, e.g. the on-Air date and duration of a movie in which Kevin Bacon appears, is displayed as shown in FIG. 15.

FIG. 16 is a list of the EPG data. As shown in the list, the EPG data is composed of EPG_cotnents_data, EPG_control_data, EPG_management_data and EPG_display_data. Further, the EPG_cotnents_data is composed of event_data_element describing information on a broadcasting program, channel_data_element describing information on a broadcasting station, character_data_element describing information on characters, material_data_element describing information on materials, company_data_element describing information on a company, text_data_element describing information on a text, picture_data_element describing information on a picture, sound_data_element describing information on sound, movie_data_element describing information on a movie, and CM_data_element describing information on a CM.

The EPG_control_data is composed of main_layout_element describing main information on a browser layout, box_layout_element describing box information on the browser layout and cell_layout_element describing cell information on the browser layout, main_operation_element describing main information on browser control, box_operation_element

describing box information on the browser control and cell_operation_element describing cell information on the browser control.

The EPG_management_data is composed of main_management_element describing main information on browser management, box_management_element describing box information on the browser management, cell_management_element describing cell information on the browser management and list_management_element describing information on a program list.

Here, the structure of the screen will be explained. The screen is composed of a main screen, boxes and cells. The main screen means the whole screen as shown in FIG. 17. The box is a rectangular area obtained by dividing the main screen as shown in FIG. 18 and the cell is a rectangular area obtained by dividing the box as shown in FIG. 19.

Next, procedural steps for creating the screen display information (EPG_display_data) shown in FIG. 16 will be explained with reference to a flowchart in FIG. 20. At first, information on contents of the program (EPG_contents_data) is created in the transmitter section in Step S61. Then, data representing the structure of the EPG screen (EPG_control_data) is generated in Step S62. The EPG_contents_data and the EPG_control_data are transmitted to and received by the receiver side. Next, the process

advances to Step S63 to specify items to be displayed in each structural element of the screen from the EPG_contents_data sent from the transmitter section to generate EPG_management_data. In Step S64, information of the specified item is collected to generate EPG_event_data. Then, the process advances to Step S65 to create display data (EPG_display_data) based on the EPG_contents_data, the EPG_control_data and the EPG_management_data.

FIG. 21 shows a structural example of EPG_data_stream. As shown in the figure, the EPG_data_stream is composed of an element_header and a plurality of element_blocks. The element_header is composed of element_tag, element_size and element_referenceNo and each element_block is composed of element_block_label, element_block_size and element_block_data.

Kinds of the element block include identification No. (ID) allocated to each element_block, a numerical value, a character string (text), a picture, sound, a movie, a time and the like as shown in FIG. 22.

FIG. 23 shows event_data_element_blocks composing an element whose element_tag of element_header is event_data_tag. FIG. 24 shows the structure of the event_data_element. As shown in FIGs. 23 and 24, the event_data_element is composed of respective element_blocks describing ID allocated in unit of program (event_no),

program starting date/time (onAir_time), a duration of the program (duration), ID of a channel broadcasting the program (channel_no), ID of the program category (category_no), ID of the program type (Program_type), the main title of the program (main_title), the sub-title of the program (sub_title), the contents of the program (1st_detail), the detailed contents of the program (2nd_detail), ID representing the character in the program (character_no), ID representing a picture related to the program (picture_no), ID representing sound related to the program (sound_no), ID representing a movie related to the program (movie_no), and ID representing a company related to the program (company_no).

FIG. 25 shows channel_data_element_blocks composing an element whose element_tag of element_header is channel_data_tag. FIG. 26 shows the structure of the channel_data_element. As shown in FIGs. 25 and 26, the channel_data_element is composed of respective element_blocks describing ID allocated in unit of channel (channel_no), the name of the broadcasting station (station_name), a picture of a logo of the broadcasting station (station_icon), ID of a picture related to the broadcasting station (picture_no), ID of sound related to the broadcasting station (sound_no), ID of a movie related

to the broadcasting station (movie_no) and ID of a company related to the broadcasting station (company_no).

FIG. 27 shows character_data_element_blocks composing an element whose element_tag of element_header is character_data_tag. FIG. 28 shows the structure of the character_data_element. As shown in FIGs. 27 and 28, the character_data_element is composed of respective element_blocks describing ID allocated in unit of character (character_no), the name of the character (character_name), the age (character_age), the profile (character_profile), ID of a character related to the character (character_no), ID of a picture related to the character (picture_no), ID of sound related to the character (sound_no), and ID of a movie related to the character (movie_no).

FIG. 29 shows text_data_element_blocks composing an element whose element_tag of element_header is text_data_tag. As shown in FIG. 29, the text_data_element is composed of respective element_blocks describing ID allocated in unit of text (text_no), the text name (text_name), the format ID of the text (text_format_no), ID of a program related to the text (program_no), ID of a character related to the text (character_no), ID of a picture related to the text (picture_no), ID of sound related to the text (sound_no), and ID of a movie related to the text (movie_no).

FIG. 30 shows picture_data_element_blocks composing an element whose element_tag of element_header is picture_data_tag. As shown in FIG. 30, the picture_data_element is composed of respective element_blocks describing ID allocated in unit of a picture (picture_no), the picture name (picture_name), the format ID of the picture (picture_format_no), ID of a program related to the picture (program_no), ID of a character related to the picture (character_no), ID of a picture related to the picture (picture_no), ID of sound related to the picture (sound_no), and ID of a movie related to the picture (movie_no).

FIG. 31 shows sound_data_element_blocks composing an element whose element_tag of element_header is sound_data_tag. As shown in FIG. 31, the sound_data_element is composed of respective element_blocks describing ID allocated in unit of a sound (sound_no), the sound name (sound_name), the format ID of the sound (sound_format_no), ID of a program related to the sound (program_no), ID of a character related to the sound (character_no), ID of a picture related to the sound (picture_no), ID of sound related to the sound (sound_no), and ID of a movie related to the sound (movie_no).

FIG. 32 shows movie_data_element_blocks composing an element whose element_tag of element_header is

movie_data_tag. As shown in FIG. 32, the movie_data_element is composed of respective element_blocks describing ID allocated in unit of a movie (movie_no), the movie name (movie_name), the format ID of the movie (movie_format_no), ID of a program related to the movie (program_no), ID of a character related to the movie (character_no), ID of a picture related to the movie (picture_no), ID of sound related to the movie (sound_no), and ID of a movie related to the movie (movie_no).

FIGs. 33A and 33B show a structural example of a screen page. As shown in FIG. 33A, page_main is composed of a predetermined number of page_boxes and each page_box is composed of a predetermined number of page_cells. In case of the example shown in FIG. 33B, the page_main is composed of three page_boxes, the page_box displayed on the left of the screen is composed of six page_cells, page_box displayed on the upper right of the screen is composed of three page_cells and page_box displayed on the lower right of the screen is composed of two page_cells.

FIGs. 34A through 34C show the structure of layout_element_block describing information for defining the structure of the screen as shown in FIG. 33. FIG. 34A shows layout_data_element_block composing an element whose element_tag of element_header is main_layout_tag. As shown in FIG. 34A, the layout_element_block is composed of ID

allocated in unit of page to be displayed (page_no), the page name (page_name), the page display position (page_position) and ID of a box composing the page (box_no).

FIG. 34B shows layout_element_block composing an element whose element_tag of element_header is box_layout_tag. As shown in FIG. 34B, the layout_element_block is composed of ID allocated in unit of box (box_no), the box name (box_name), the box display position (box_position) and ID of a cell composing the box (cell_no).

FIG. 34C shows layout_element_block composing an element whose element_tag of element_header is cell_layout_tag. As shown in FIG. 34C, the layout_element_block is composed of ID allocated in unit of cell (cell_no), the cell name (cell_name), the cell display position (cell_position), ID of a program related to the cell (program_no), ID of a channel related to the cell (channel_no), ID of a character related to the cell (character_no) and ID of a material related to the cell (material_no).

Accordingly, the boxes may be displayed on the screen, the cells may be displayed in the box and information on the program, channel and the like may be related to each cell based on those information.

FIGs. 35 through 37 show detailed structural examples of the EPG_contents_data in the EPG_data shown in FIG. 16. As shown in the figures, the event_data_element composing the EPG_contents_data is composed of event_no_block describing the ID allocated in unit of program, onAir_time_block describing the program starting date/time, duration_block describing the duration of the program, onAir_channel_block describing the channel_no of the channel broadcasting the program, category_block describing the category_no of the category of the program, eventType_block describing type_no of the program type, main_title_block describing the main title of the program, sub_title_block describing the sub-title of the program, 1st_detail_block describing the contents of the program, 2nd_detail_block describing the detailed contents of the program, relational_program_no_block describing program_no of the related program, relational_character_block describing character_no of the related character (cast), relational_material_block describing material_no of the related material, relational_company_block describing company_no of the related company (sponsor), relational_text_block describing text_no of the related text, relational_picture_block describing picture_no of the related picture, relational_sound_block describing sound_no

of the related sound, and relational_movie_block describing movie_no of the related movie.

The channel_data_element composing the EPG_contents_data is composed of channel_no_block describing the ID allocated in unit of channel, station_name_block describing the name of the broadcasting station, station_icon_block describing the station_icon of the broadcasting station, relational_program_no_block describing program_no of the related program, relational_character_block describing character_no of the related character, relational_material_block describing material_no of the related material, relational_company_block describing compnay_no of the related company, relational_text_block describing text_no of the related text, relational_picture_block describing picture_no of the related picture, relational_sound_block describing sound_no of the related sound, and relational_movie_block describing movie_no of the related movie.

The character_data_element composing the EPG_contents_data is composed of character_no_block describing the ID allocated in unit of character, character_name_block describing the name of the character, character_age_block describing the age of the character, character_profile_block describing the profile of the

character, relational_program_no_block describing program_no of the related program, relational_character_block describing character_no of the related character, relational_material_block describing material_no of the related material, relational_company_block describing compnay_no of the related company, relational_text_block describing text_no of the related text, relational_picture_block describing picture_no of the related picture, relational_sound_block describing sound_no of the related sound, and relational_movie_block describing movie_no of the related movie.

The material_data_element (see FIG. 36) composing the EPG_contents_data is composed of material_no_block describing the ID allocated in unit of material, material_name_block describing the name of the material, relational_program_no_block describing program_no of the related program, relational_character_block describing character_no of the related character, relational_material_block describing material_no of the related material, relational_company_block describing company_no of the related company, relational_text_block describing text_no of the related text, relational_picture_block describing picture_no of the related picture, relational_sound_block describing sound_no

of the related sound, and relational_movie_block describing movie_no of the related movie.

The company_data_element composing the EPG_contents_data is composed of company_no_block describing the ID allocated in unit of company, company_name_block describing the name of the company, relational_program_no_block describing program_no of the related program, relational_character_block describing character_no of the related character, relational_material_block describing material_no of the related material, relational_company_block describing compnay_no of the related company, relational_text_block describing text_no of the related text, relational_picture_block describing picture_no of the related picture, relational_sound_block describing sound_no of the related sound, and relational_movie_block describing movie_no of the related movie.

The text_data_element composing the EPG_contents_data is composed of text_no_block describing the ID allocated in unit of text, text_name_block describing the name of the text, text_format_block describing the format ID of the text, relational_program_no_block describing program_no of the related program, relational_character_block describing character_no of the related character, relational_material_block describing material_no of the

related material, relational_company_block describing compnay_no of the related company, relational_text_block describing text_no of the related text, relational_picture_block describing picture_no of the related picture, relational_sound_block describing sound_no of the related sound, and relational_movie_block describing movie_no of the related movie.

The picture_data_element composing the EPG_contents_data is composed of picture_no_block describing the ID allocated in unit of picture, picture_name_block describing the name of the picture, picture_format_block describing the format ID of the picture, relational_program_no_block describing program_no of the related program, relational_character_block describing character_no of the related character, relational_material_block describing material_no of the related material, relational_company_block describing compnay_no of the related company, relational_text_block describing text_no of the related text, relational_picture_block describing picture_no of the related picture, relational_sound_block describing sound_no of the related sound, and relational_movie_block describing movie_no of the related movie.

The sound_data_element (see FIG. 37) composing the EPG_contents_data is composed of sound_no_block describing

the ID allocated in unit of sound, sound_name_block describing the name of the sound, sound_format_block describing the format ID of the sound, relational_program_no_block describing program_no of the related program, relational_character_block describing character_no of the related character, relational_material_block describing material_no of the related material, relational_company_block describing compnay_no of the related company, relational_text_block describing text_no of the related text, relational_picture_block describing picture_no of the related picture, relational_sound_block describing sound_no of the related sound, and relational_movie_block describing movie_no of the related movie.

The movie_data_element composing the EPG_contents_data is composed of movie_no_block describing the ID allocated in unit of movie, movie_name_block describing the name of the movie, movie_format_block describing the format ID of the movie, relational_program_no_block describing program_no of the related program, relational_character_block describing character_no of the related character, relational_material_block describing material_no of the related material, relational_company_block describing compnay_no of the related company, relational_text_block describing text_no of the related text,

relational_picture_block describing picture_no of the related picture, relational_sound_block describing sound_no of the related sound, and relational_movie_block describing movie_no of the related movie.

FIG. 38 shows the detailed structural example of the EPG_control_data in the EPG_data shown in FIG. 16. As shown in the figure, main_layout_element composing the EPG_control_data is composed of page_no_block describing ID allocated in unit of page to be displayed, page_name_block describing the name of the page, page_position_block describing position where the page is displayed and compose_box_block describing box_no of a box composing the page.

The box_layout_element composing the EPG_control_data is composed of box_no_block describing ID allocated in unit of box, box_name_block describing the name of the box, box_position_block describing position where the box is displayed and compose_cell_block describing cell_no of a cell composing the box.

The cell_layout_element composing the EPG_control_data is composed of cell_no_block describing ID allocated in unit of cell, cell_name_block describing the name of the cell, cell_position_block describing position where the cell is displayed, contents_element_block describing kinds of contents_element to be displayed in the cell and

contents_id_block describing ID of the contents_element to be displayed in the cell.

Information for manipulating the main screen is described in the main_operation_element composing the EPG_control_data. Information for manipulating the box screen is described in the box_operation_element composing the EPG_control_data. Information for manipulating the cell screen is described in the cell_operation_element composing the EPG_control_data.

FIG. 39 shows a detailed structural example of list_management_element in the EPG_management_data in the EPG_data shown in FIG. 16. As shown in the figure, list_management_element is composed of ID allocated in unit of program list (list_no_block), the date of the program list (list_time_block), ID allocated in unit of program (event_no_block) and the date/time starting the program (onAir_time_block).

As described above, even when the same program is to be broadcasted by different broadcasting stations and different time as often seen in local districts and minor stations, the present embodiment allows the process thereof to be implemented efficiently by transmitting the EPG_contents_data corresponding to the respective cases. Further, even when the program is delayed or postponed by some reason, the present embodiment allows the process to be

implemented efficiently by transmitting the corresponding EPG_contents_data.

Further, because the information concerning on the layout of the display screen of the EPG information is transmitted separately from the EPG information, the EPG information may be transmitted while giving consideration to the degree of freedom in changing the display format and the layout on the receiver side.

It is noted that the transmission media include network transmission media such as Internet and digital satellite, beside information recording media such as FD (floppy disc) and CD-ROM (compact disc-read only memory).

It is also noted that the digital TV described in the above-mentioned embodiment may be realized by using either satellite or ground wave.

While the preferred embodiment has been described, variations thereto will occur to those skilled in the art within the scope of the present inventive concepts which are delineated by the following claims.

WHAT IS CLAIMED IS:

1. A transmitter system for transmitting second information related to first information, comprising:

generating means for generating said second information and third information concerning on a layout in displaying said second information; and

transmitting means for transmitting said second information and said third information;

said generating means composing said second information and said third information of a first part including identification information for identifying said second information and said third information and a second part composed of actual data.

2. The transmitter system according to Claim 1, wherein said generating means composes said second part of a third part composed of identification information for identifying said second part and a fourth part composed of the actual data.

3. The transmitter system according to Claim 1, wherein said transmitting means transmits said second information and said third information separately.

4. A receiver system for receiving second information related to first information, comprising:

receiving means for receiving said second information and third information concerning on a layout in displaying said second information; and

generating means for generating fourth information for displaying said second information from said second information and said third information.

5. The receiver system according to Claim 4, further comprising:

first separating means for separating said second information and said third information into a first part containing identification information for identifying said second information and said third information and a second part composed of actual data;

second separating means for separating said second part into a third part comprising identification information for identifying said second part and a fourth part composed of actual data; and

retrieving means for retrieving data of said second part and said fourth part of said second information and said third information based on said identification information.

6. The receiver system according to Claim 5, further comprising updating means for updating said second part and said fourth part of said second information and said third information based on said identification information.

7. The receiver system according to Claim 5, further comprising display control means for displaying a first window on a predetermined screen and displaying data of said fourth part within said first window.

8. A transmitting method for transmitting second information related to first information, comprising steps of:

generating said second information and third information concerning on a layout in displaying said second information; and

transmitting said second information and said third information;

said generating step composing said second information and said third information of a first part including identification information for identifying said second information and said third information and a second part composed of actual data.

9. A receiving method for receiving second information related to first information, comprising steps of:

receiving said second information and third information concerning on a layout in displaying said second information; and

generating fourth information for displaying said second information from said second information and said third information.

10. A transmission medium for transmitting a computer program for transmitting second information related to first information, said computer program comprising steps of:

generating said second information and third information concerning on a layout in displaying said second information; and

transmitting said second information and said third information;

said generating step composing said second information and said third information of a first part including identification information for identifying said second information and said third information and a second part composed of actual data.

11. A transmission medium for transmitting a computer program for receiving second information related to first information, said computer program comprising steps of:

receiving said second information and third information concerning on a layout in displaying said second information; and

generating fourth information for displaying said second information from said second information and said third information.

12. The receiver system according to Claim 4, further comprising second generating means for generating fifth information from said second information and said third information.

13. The receiving method according to Claim 9, further comprising a second generating step for generating fifth information from said second information and said third information.

14. The transmitting medium according to Claim 11, further comprising a second generating step for generating fifth information from said second information and said third information.

15. The receiver system according to Claim 5, wherein said first window is composed of one or more boxes and said box is composed of one or more cells.

ABSTRACT OF THE DISCLOSURE

There is provided a system which allows information related to a broadcasting program to be processed efficiently. The program related information related to the certain program created on the transmitter side is composed of Event Data, Channel Data, Character Data, CM data and the like and is converted into EPG_contents_data. Further, display related information concerning on a layout and the like in displaying the program related information created on the transmitter side on a screen is composed of Layout Data, Color Data, Font Data and Operation Data and is converted into EPG_control_data. The receiver side generates EPG_management_data as necessary from the EPG_contents_data and the EPG_control_data transmitted from the transmitter side and generates EPG_display_data which is display information from the EPG_contents_data and the EPG_control_data.

FIG.1

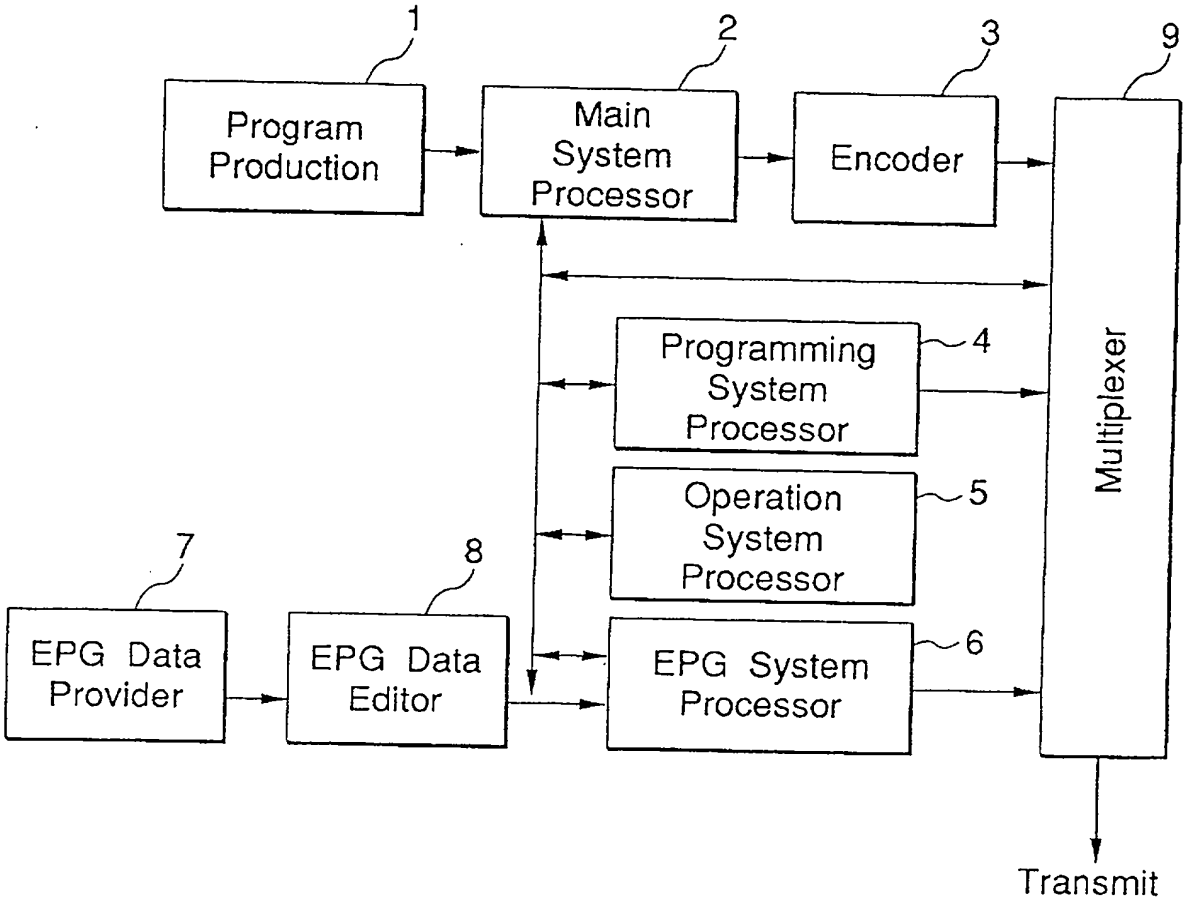

FIG.2

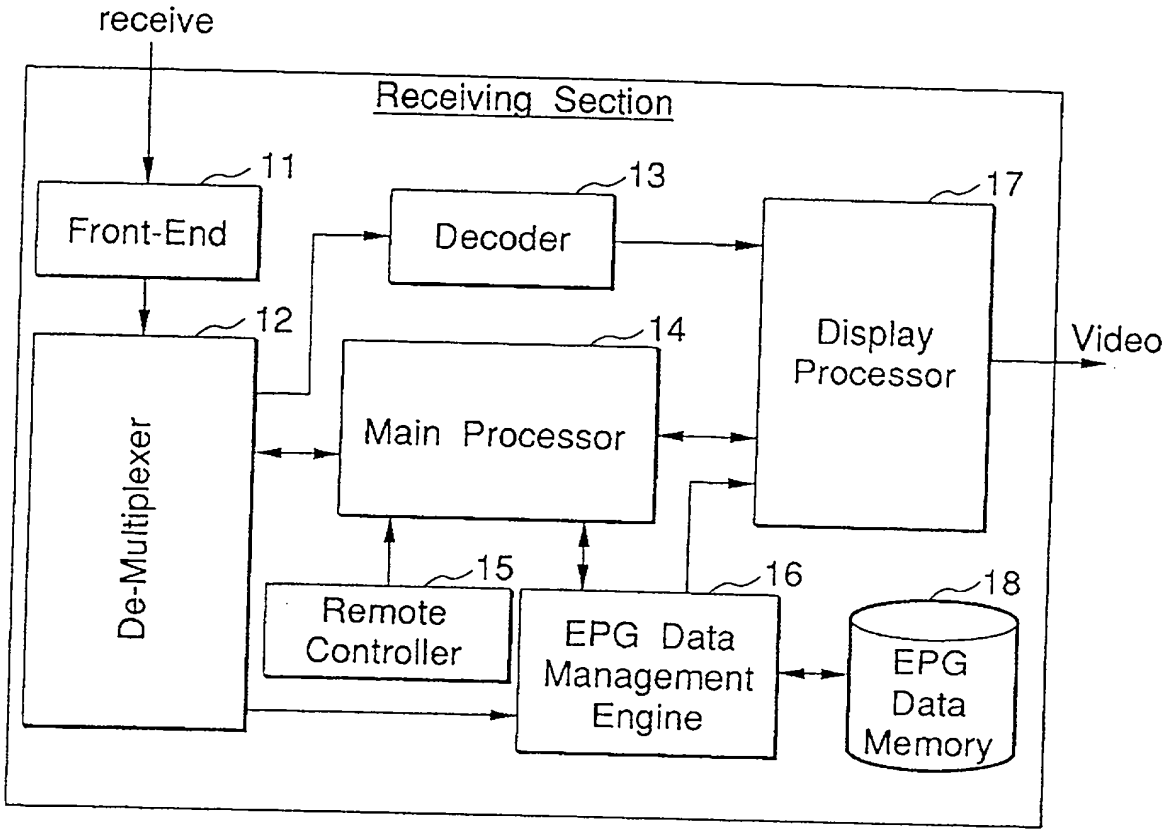
receive
Receiving Section
11
Front-End
13
Decoder
17
Display Processor
Video
12
De-Multiplexer
14
Main Processor
15
Remote Controller
16
EPG Data Management Engine
18
EPG Data Memory

FIG.3

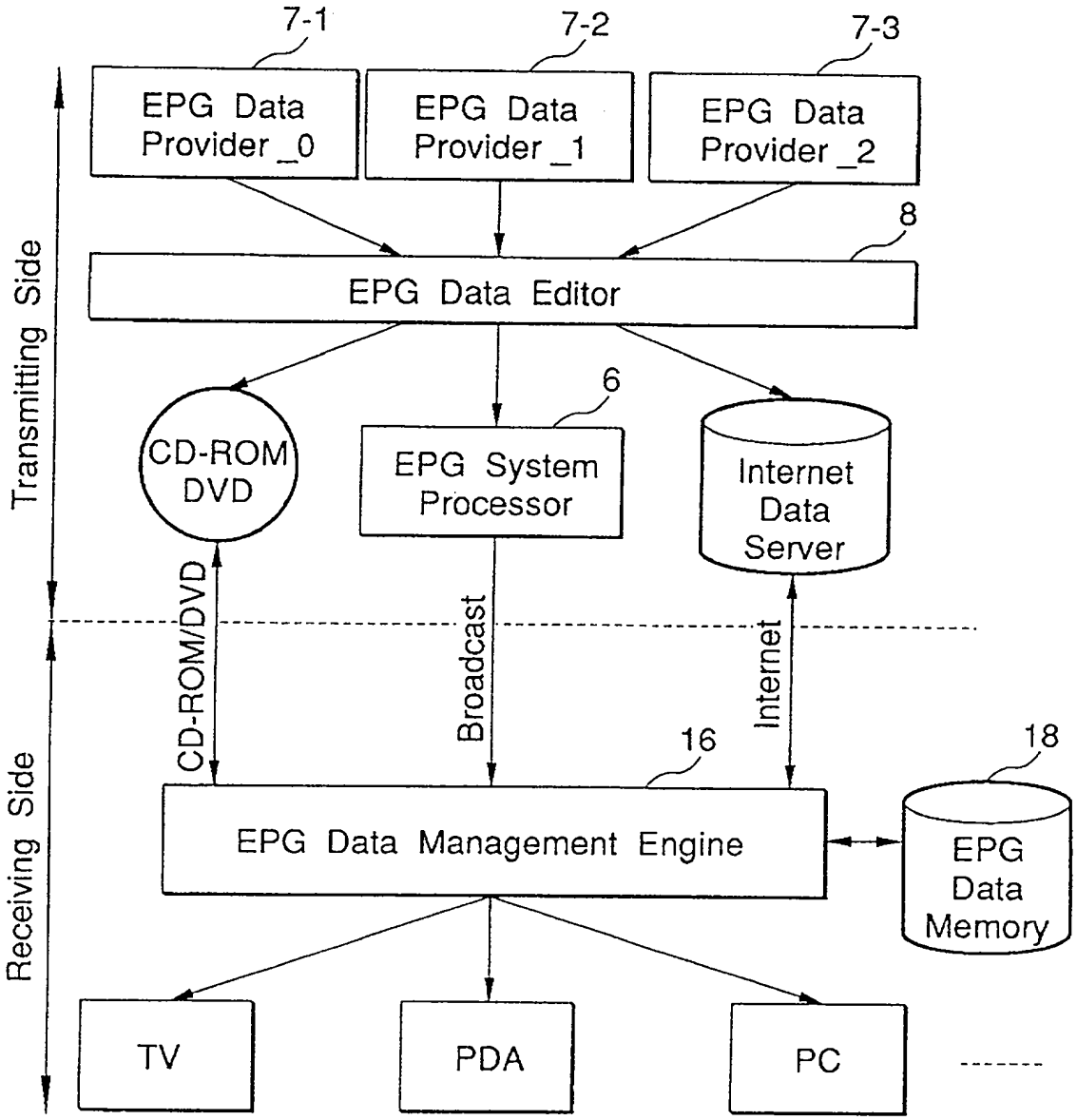
7-1
7-2
7-3
EPG Data Provider _0
EPG Data Provider _1
EPG Data Provider _2
8
EPG Data Editor
Transmitting Side
CD-ROM DVD
6
EPG System Processor
Internet Data Server
CD-ROM/DVD
Broadcast
Internet
16
18
EPG Data Management Engine
EPG Data Memory
Receiving Side
TV
PDA
PC

FIG.4

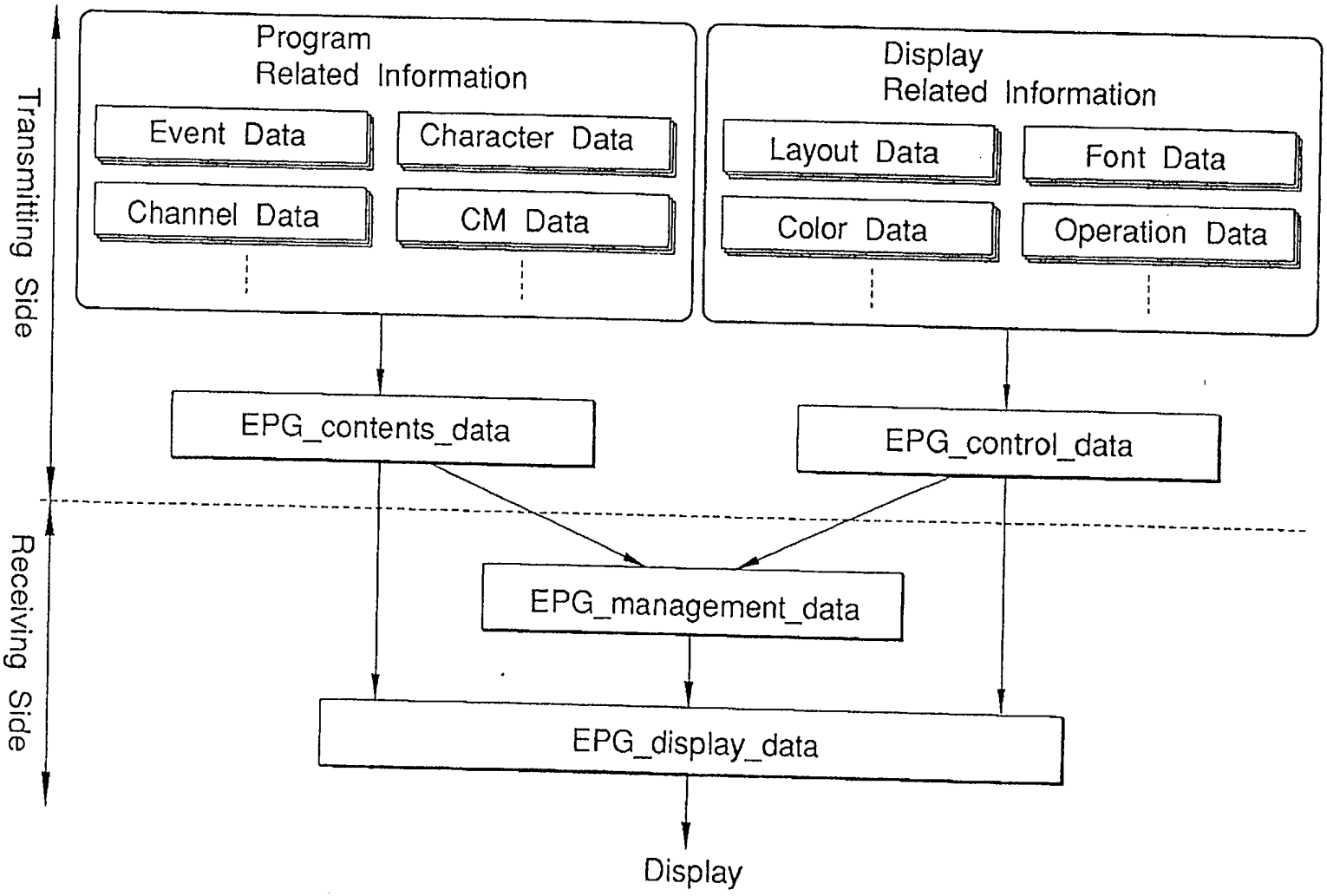
Transmitting Side
Receiving Side
Program
Related Information
Event Data
Character Data
Channel Data
CM Data
Display
Related Information
Layout Data
Font Data
Color Data
Operation Data
EPG_contents_data
EPG_control_data
EPG_management_data
EPG_display_data
Display

FIG.5

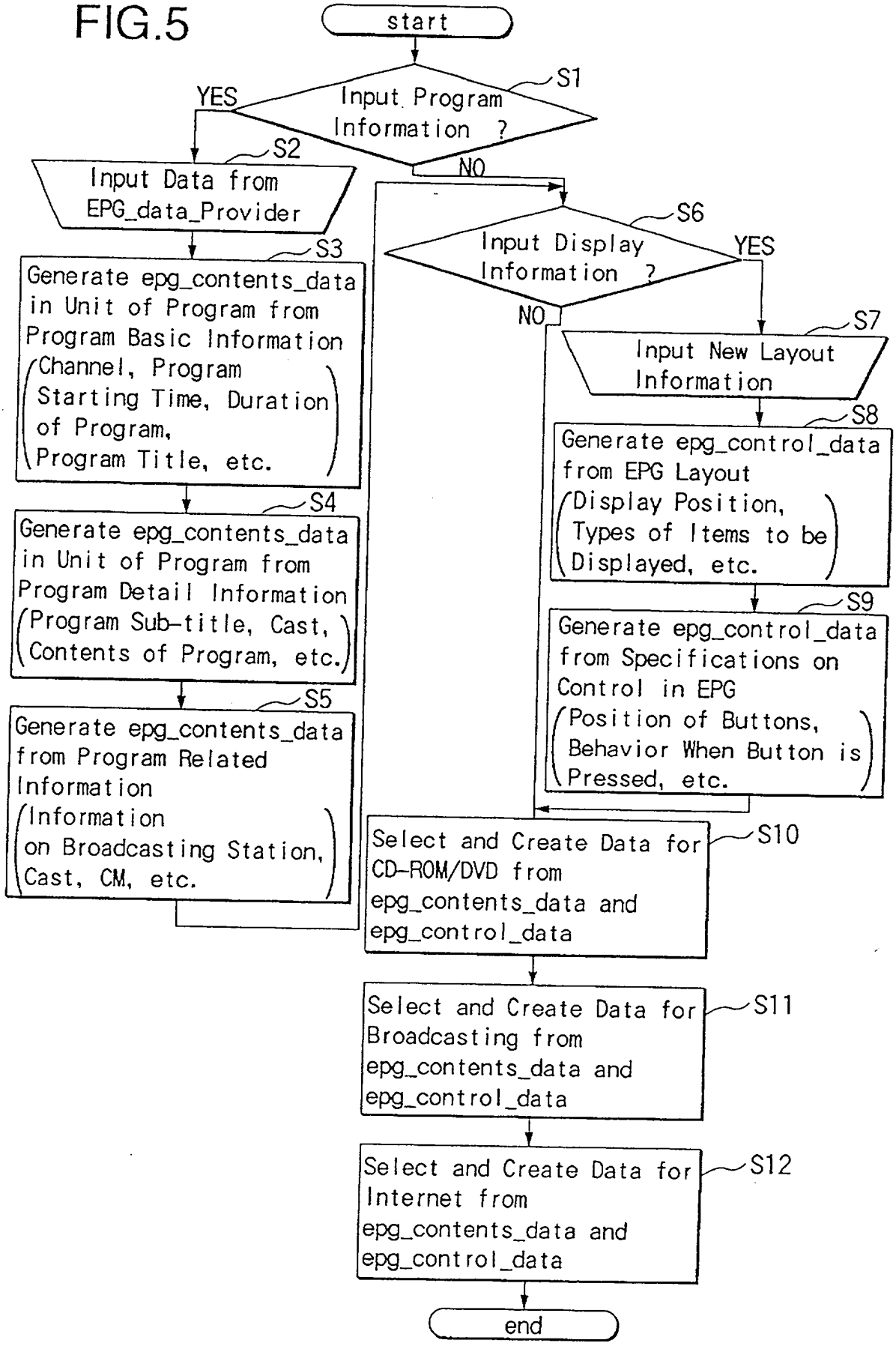
start
Input Program Information ?
S1
YES
NO
Input Data from EPG_data_Provider
S2
Generate epg_contents_data in Unit of Program from Program Basic Information (Channel, Program Starting Time, Duration of Program, Program Title, etc.)
S3
Generate epg_contents_data in Unit of Program from Program Detail Information (Program Sub-title, Cast, Contents of Program, etc.)
S4
Generate epg_contents_data from Program Related Information (Information on Broadcasting Station, Cast, CM, etc.)
S5
Input Display Information ?
S6
YES
NO
Input New Layout Information
S7
Generate epg_control_data from EPG Layout (Display Position, Types of Items to be Displayed, etc.)
S8
Generate epg_control_data from Specifications on Control in EPG (Position of Buttons, Behavior When Button is Pressed, etc.)
S9
Select and Create Data for CD-ROM/DVD from epg_contents_data and epg_control_data
S10
Select and Create Data for Broadcasting from epg_contents_data and epg_control_data
S11
Select and Create Data for Internet from epg_contents_data and epg_control_data
S12
end

FIG.6

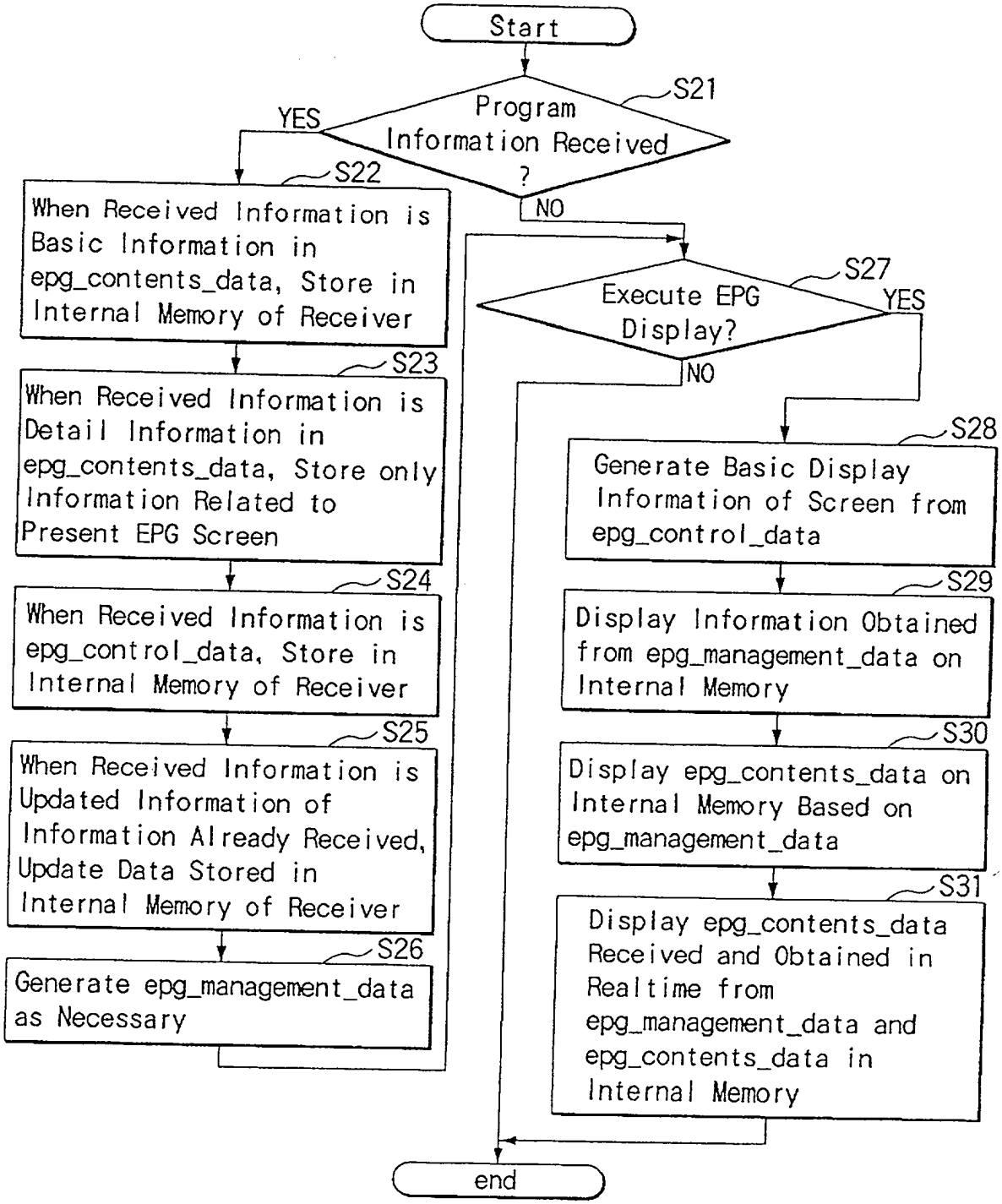
Start
S21
Program Information Received ?
YES
NO
S22
When Received Information is Basic Information in epg_contents_data, Store in Internal Memory of Receiver
S23
When Received Information is Detail Information in epg_contents_data, Store only Information Related to Present EPG Screen
S24
When Received Information is epg_control_data, Store in Internal Memory of Receiver
S25
When Received Information is Updated Information of Information Already Received, Update Data Stored in Internal Memory of Receiver
S26
Generate epg_management_data as Necessary
S27
Execute EPG Display?
YES
NO
S28
Generate Basic Display Information of Screen from epg_control_data
S29
Display Information Obtained from epg_management_data on Internal Memory
S30
Display epg_contents_data on Internal Memory Based on epg_management_data
S31
Display epg_contents_data Received and Obtained in Realtime from epg_management_data and epg_contents_data in Internal Memory
end

FIG.7

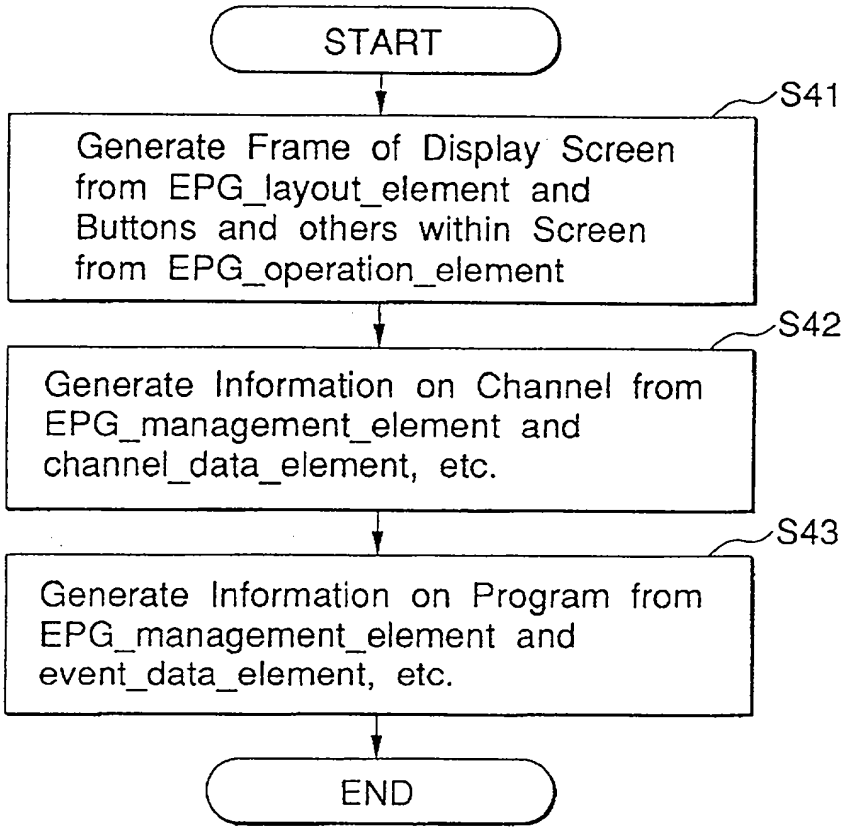
START
S41
Generate Frame of Display Screen from EPG_layout_element and Buttons and others within Screen from EPG_operation_element
S42
Generate Information on Channel from EPG_management_element and channel_data_element, etc.
S43
Generate Information on Program from EPG_management_element and event_data_element, etc.
END

FIG.8

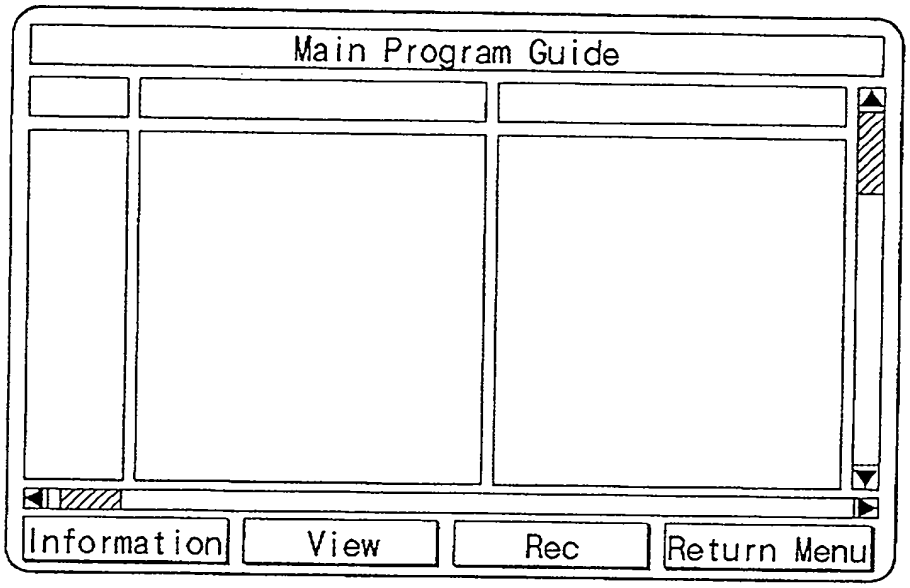
Main Program Guide
Information
View
Rec
Return Menu

FIG.9

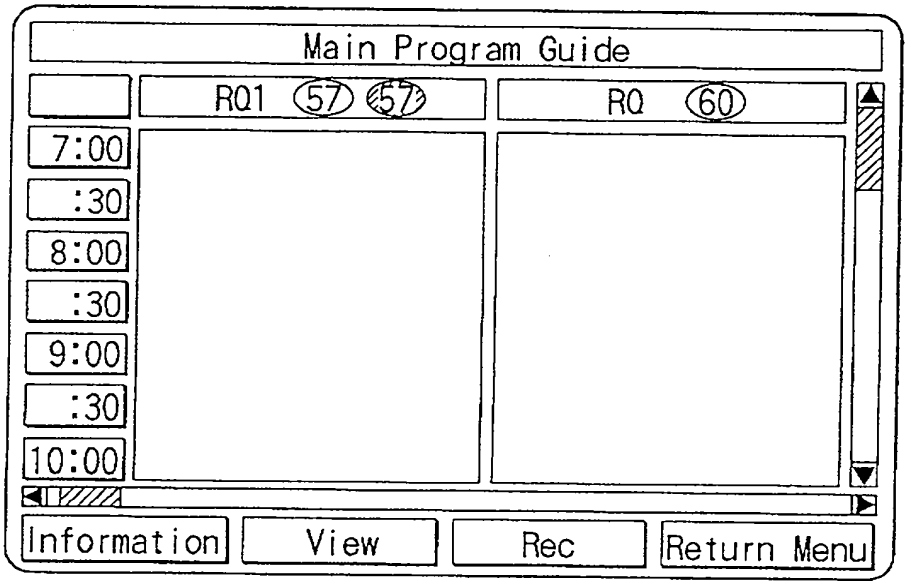
Main Program Guide
RQ1 57 57
RQ 60
7:00
:30
8:00
:30
9:00
:30
10:00
Information
View
Rec
Return Menu

FIG.10

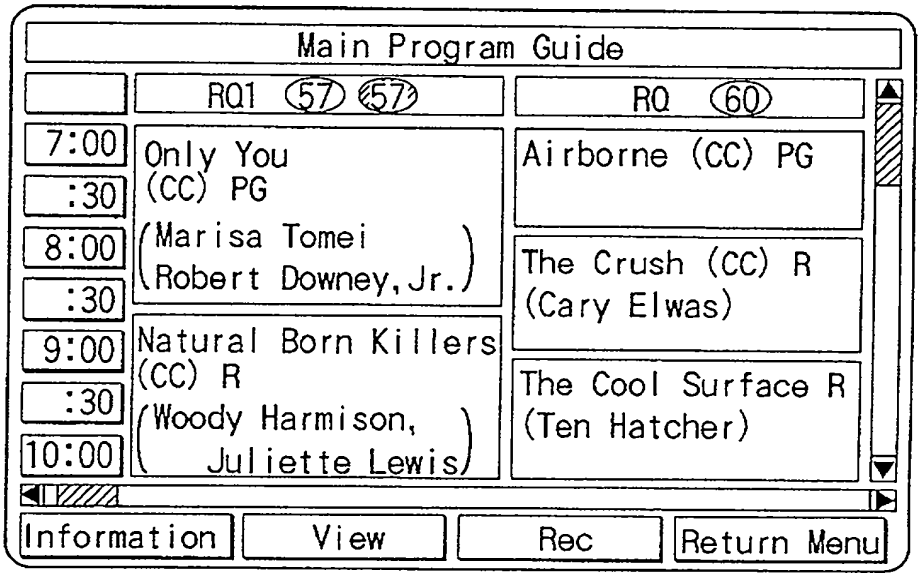
Main Program Guide
RQ1 57 57
RQ 60
7:00
:30
8:00
:30
9:00
:30
10:00
Only You
(CC) PG
(Marisa Tomei
Robert Downey, Jr.)
Natural Born Killers
(CC) R
(Woody Harmison,
Juliette Lewis)
Airborne (CC) PG
The Crush (CC) R
(Cary Elwas)
The Cool Surface R
(Ten Hatcher)
Information
View
Rec
Return Menu

FIG.11

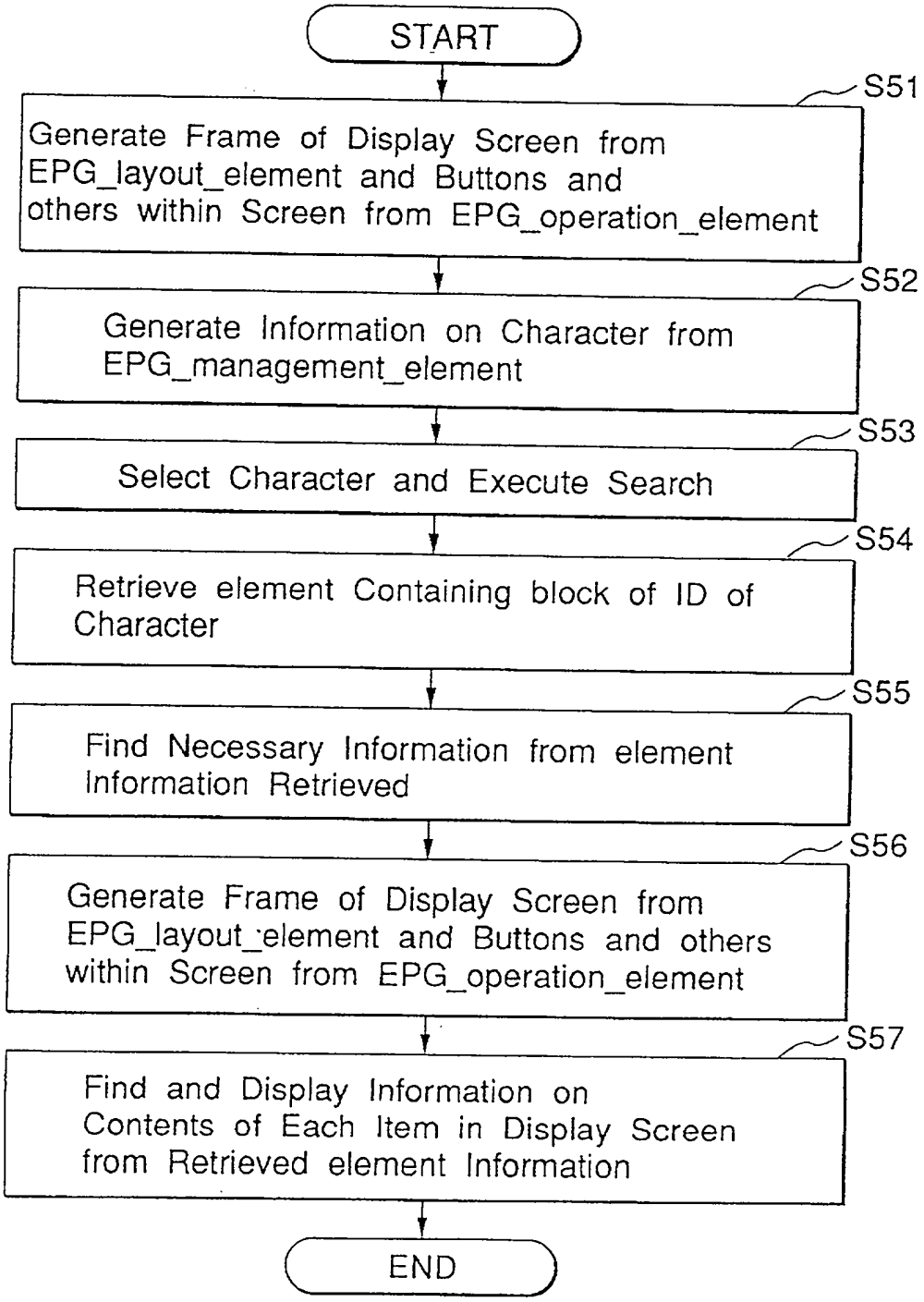
START
S51
Generate Frame of Display Screen from EPG_layout_element and Buttons and others within Screen from EPG_operation_element
S52
Generate Information on Character from EPG_management_element
S53
Select Character and Execute Search
S54
Retrieve element Containing block of ID of Character
S55
Find Necessary Information from element Information Retrieved
S56
Generate Frame of Display Screen from EPG_layout_element and Buttons and others within Screen from EPG_operation_element
S57
Find and Display Information on Contents of Each Item in Display Screen from Retrieved element Information
END

FIG.12

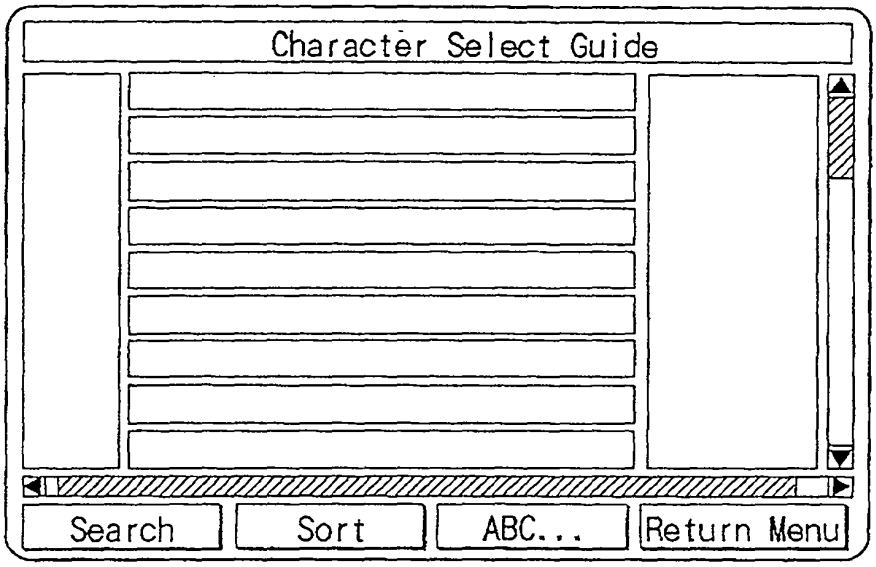
Character Select Guide
Search
Sort
ABC...
Return Menu

FIG.13

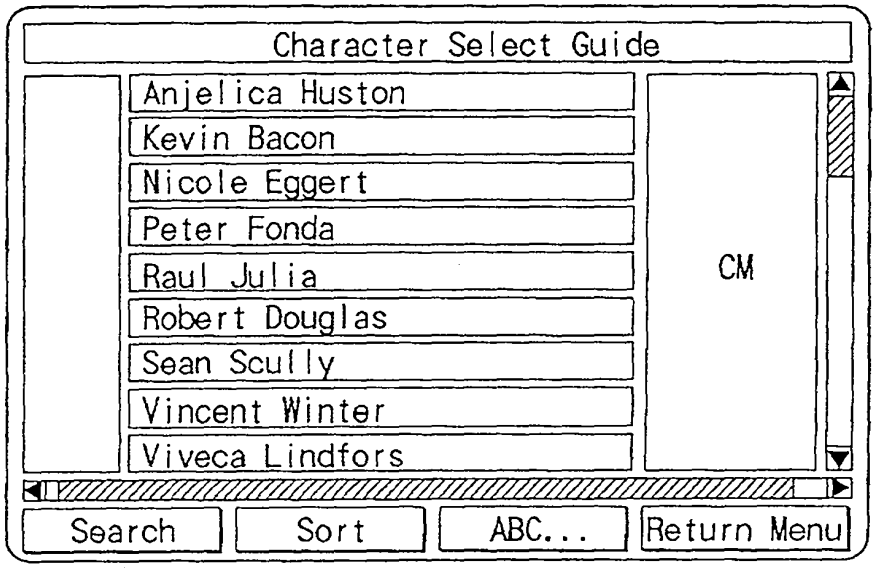
Character Select Guide
Anjelica Huston
Kevin Bacon
Nicole Eggert
Peter Fonda
Raul Julia
Robert Douglas
Sean Scully
Vincent Winter
Viveca Lindfors
CM
Search
Sort
ABC...
Return Menu

FIG.14

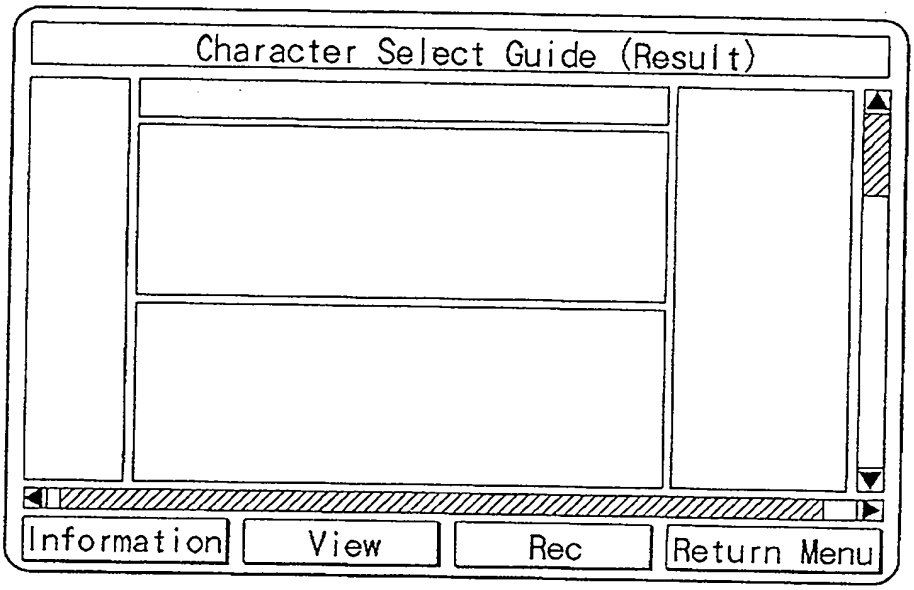
Character Select Guide (Result)
Information
View
Rec
Return Menu

FIG.15

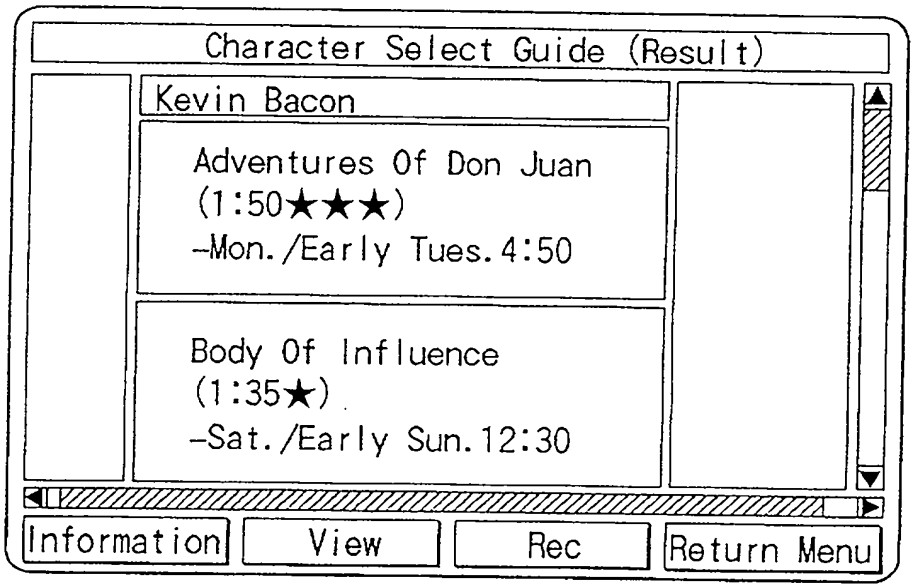
Character Select Guide (Result)
Kevin Bacon
Adventures Of Don Juan
(1:50★★★)
-Mon./Early Tues.4:50
Body Of Influence
(1:35★)
-Sat./Early Sun.12:30
Information
View
Rec
Return Menu

FIG.16

epg_data	element	description
epg_contents_data	event_data_emement	element Describing Information on Broadcasting Program
	channel_data_element	element Describing Information on Broadcasting Station
	character_data_element	element Describing Information on Characters
	material_data_element	element Describing Information on Material
	company_data_element	element Describing Information on Company
	text_data_element	element Describing Information on Text
	picture_data_element	element Describing Information on Picture
	sound_data_element	element Describing Information on Sound
	movie_data_element	element Describing Information on Movie
	CM_data_element	element Describing Information Related to CM
epg_control_data	main_layout_element	element Describing Main Information on Browser Layout
	box_layout_element	element Describing Box Information on Browser Layout
	cell_layout_element	element Describing Cell Information on Browser Layout
	main_operation_element	element Describing Main Information on Browser Control
	box_operation_element	element Describing Box Information on Browser Control
	cell_operation_element	element Describing Cell Information on Browser Control
epg_management_data	main_management_element	element Describing Main Information on Browser Management
	box_management_element	element Describing Box Information on Browser Management
	cell_management_element	element Describing Cell Information on Browser Management
	list_management_element	element Describing Information on Program List
epg_display_data	★	Browser Display Information

FIG.17

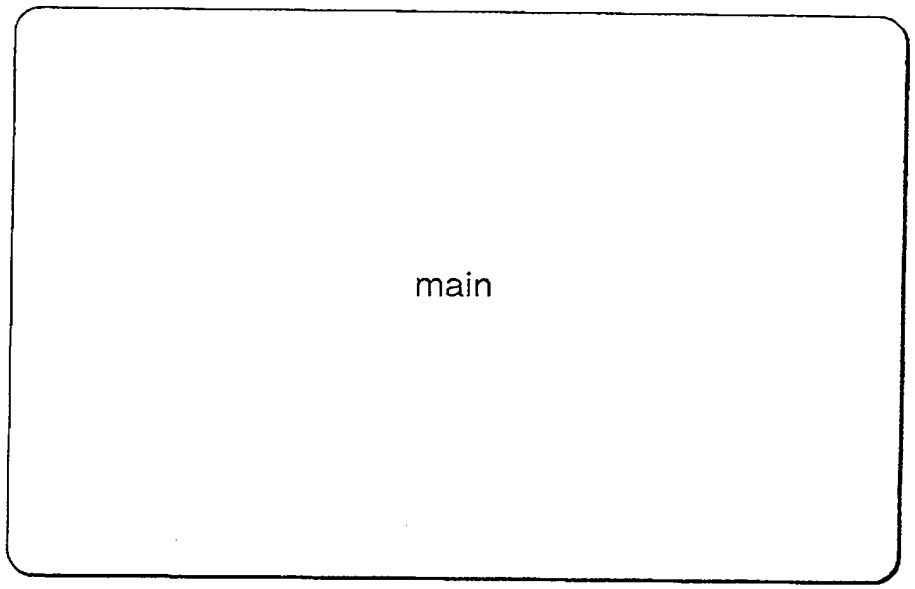

FIG.18

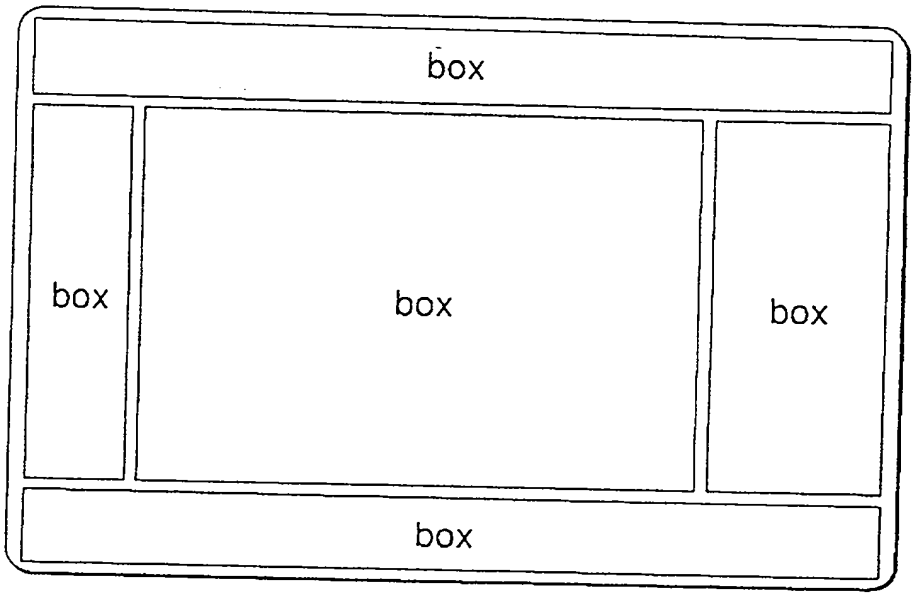
box
box
box
box
box

FIG.19

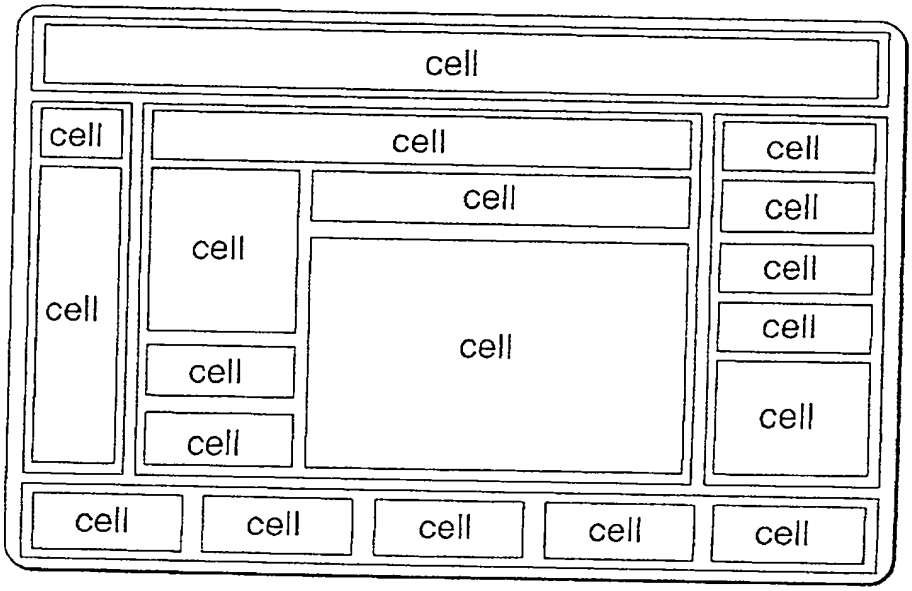
cell
cell
cell
cell
cell
cell
cell
cell
cell
cell
cell
cell
cell
cell
cell
cell
cell
cell
cell
cell

FIG.20

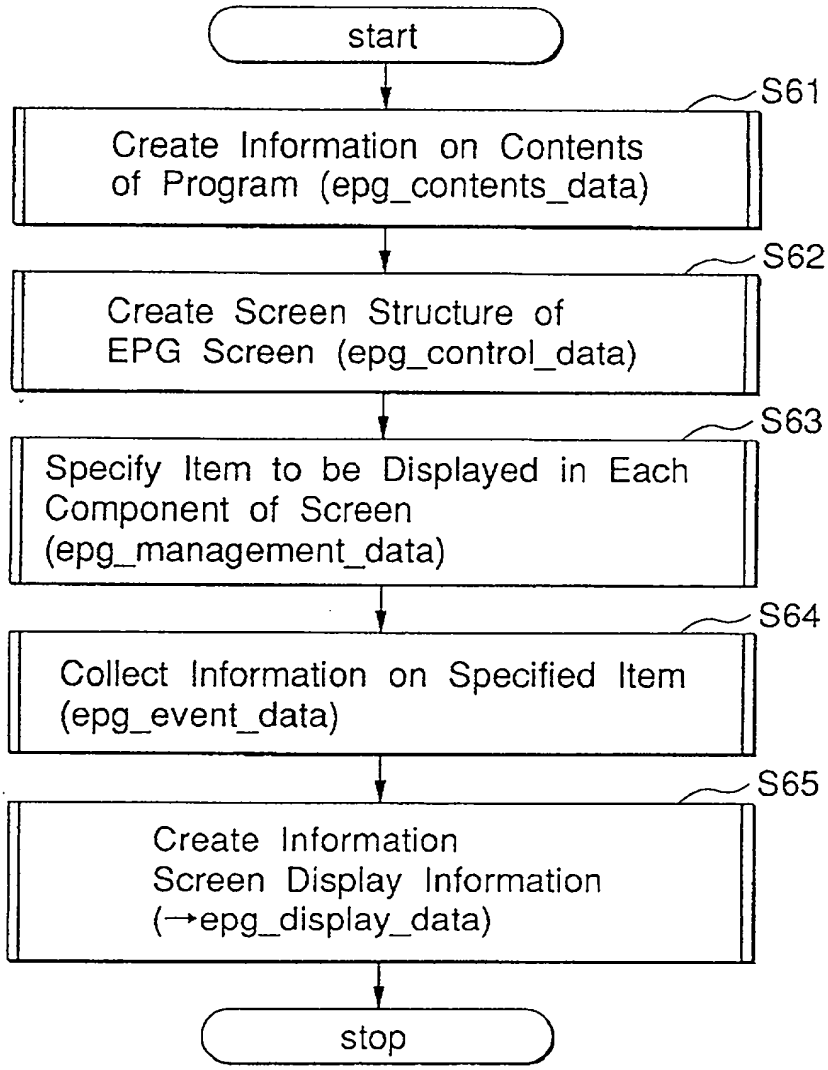
start
S61
Create Information on Contents of Program (epg_contents_data)
S62
Create Screen Structure of EPG Screen (epg_control_data)
S63
Specify Item to be Displayed in Each Component of Screen (epg_management_data)
S64
Collect Information on Specified Item (epg_event_data)
S65
Create Information Screen Display Information (→epg_display_data)
stop

FIG.21

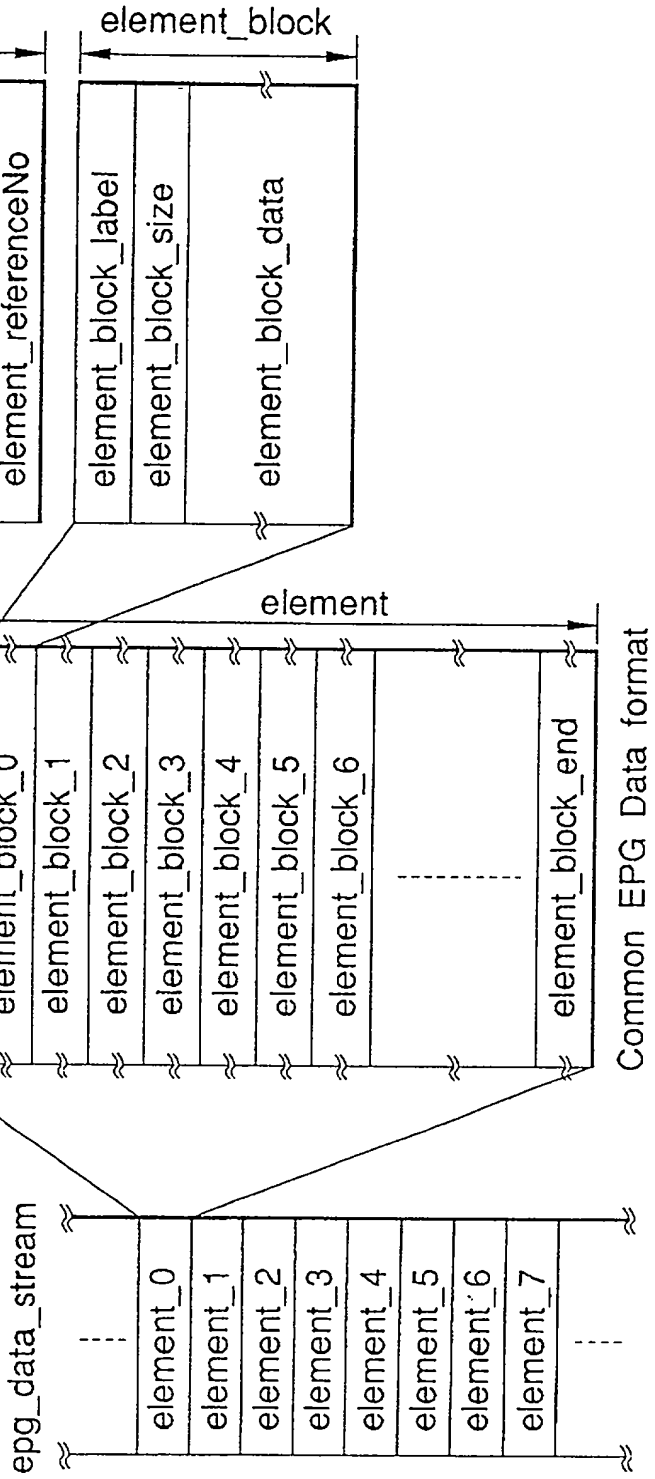
epg_data_stream
element_0
element_1
element_2
element_3
element_4
element_5
element_6
element_7
element_header
element_block_0
element_block_1
element_block_2
element_block_3
element_block_4
element_block_5
element_block_6
element_block_end
element
element_tag
element_size
element_referenceNo
element_block
element_block_label
element_block_size
element_block_data
Common EPG Data format

FIG.22

element_block_kind	element_block_data
ID	Identification No. Allocated to element_block
value	Numerical Value
text	Character String
picture	Picture
sound	Sound
movie	Movie
time	Time

FIG.23

<element_tag> …<event_data_tag>

[element_block_label]	element_block_data	element_block_kind	data
event_no_label	event_no	ID	ID Allocated in Unit of Program
onAir_time_label	onAir_time	time	Program Starting Date/Time
duration_label	duration	time	Program Broadcasting Duration
onAir_channel_label	channel_no	ID	channel_no of Channel in Which Program is Broadcasted
category_label	category_no	ID	category_no of Program Category
program Type_label	Program_type	ID	type_no of Program Type
main_title_label	main_title	text	Main Title of Program
sub_title_label	sub_title	text	Sub-Title of Program
1st_detail_label	1st_detail	text	Contents of Program
2nd_detail_label	2nd_detail	text	(Detail) Contents of Program
relational_character_label	character_no	ID	character_no of Character in Program
relational_picture_label	picture_no	ID	picture_no of Picture Related to Program
relational_sound_label	sound_no	ID	sound_no of Sound Related to Program
relational_movie_label	movie_no	ID	movie_no of Movie Related to Program
relational_company_label	company_no	ID	company_no of Company Related to Program

FIG.24A

event_data_format
(ex.0 "basic")

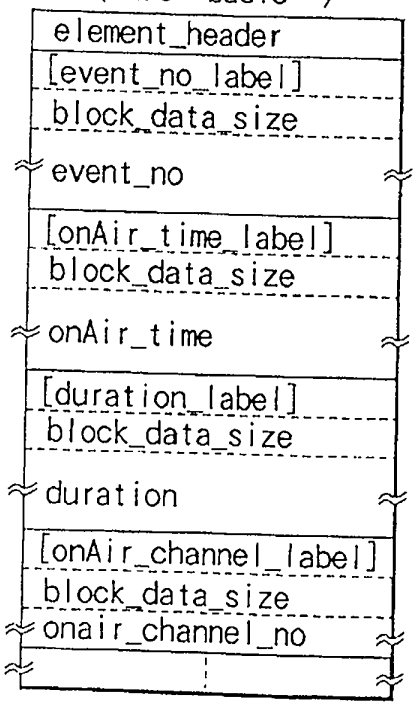

FIG.24B

event_data_format
(ex.1 "addition")

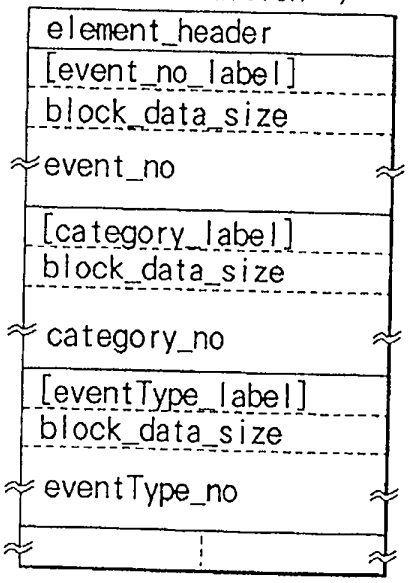

FIG.24C

event_data_format
(ex.2 "detail")

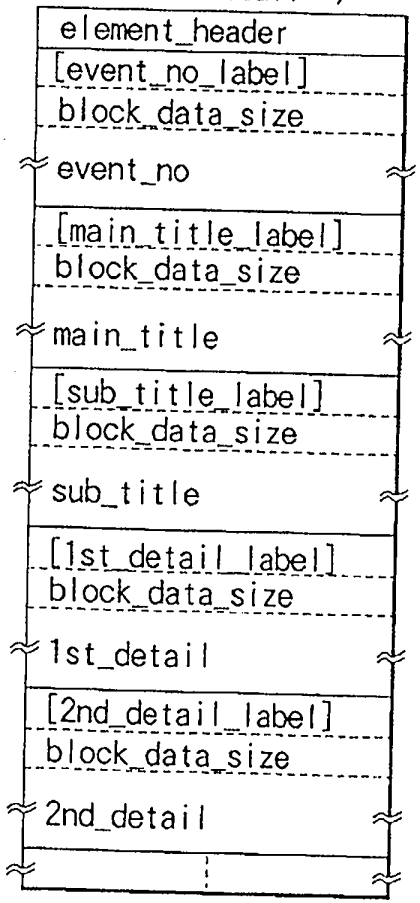

FIG.24D

event_data_format
(ex.3 "relation")

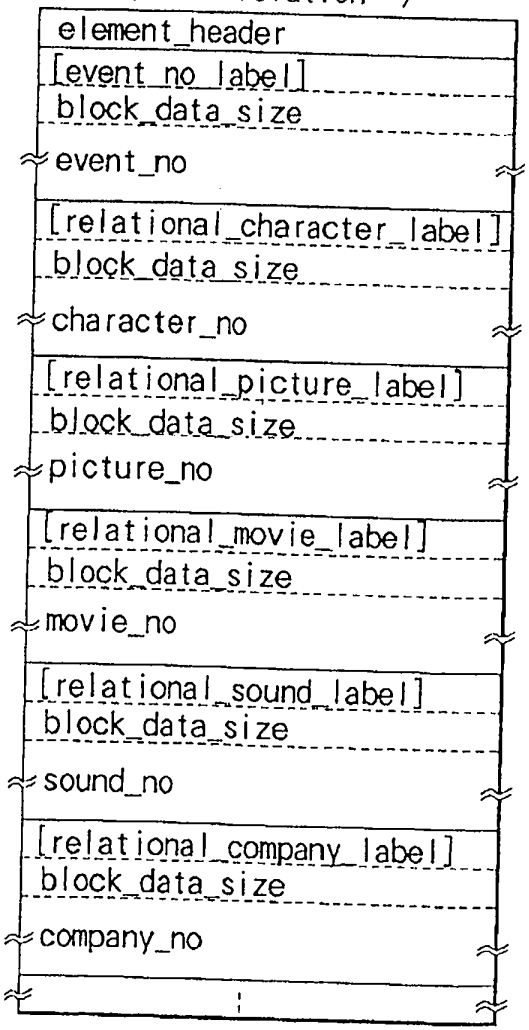

FIG.25

⟨element_tag⟩···⟨channel_data_tag⟩

[element_block_label]	element_block_data	element_block_kind	data
channel_no_label	channel_no	ID	ID Allocated in Unit of Channel
station_name_label	station_name	text	Name of Broadcasting Station
station_Icon_label	station_Icon	pict	station_Icon of Broadcasting Station
relational_picture_label	picture_no	ID	picture_no of Picture Related to Broadcasting Station
relational_sound_label	sound_no	ID	sound_no of Sound Related to Broadcasting Station
relational_movie_label	movie_no	ID	movie_no of Movie Related to Broadcasting Station
channel_company_label	company_no	ID	company_no of Company Related to Broadcasting Station

FIG.26A

channel_data_format
(ex.0 "basic")

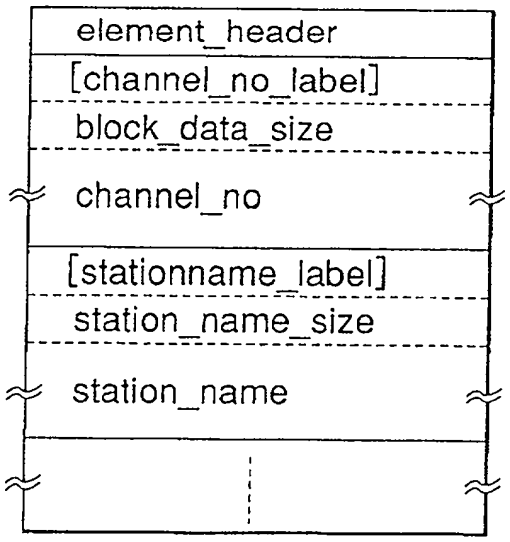

FIG.26B

channel_data_format
(ex.1 "detail")

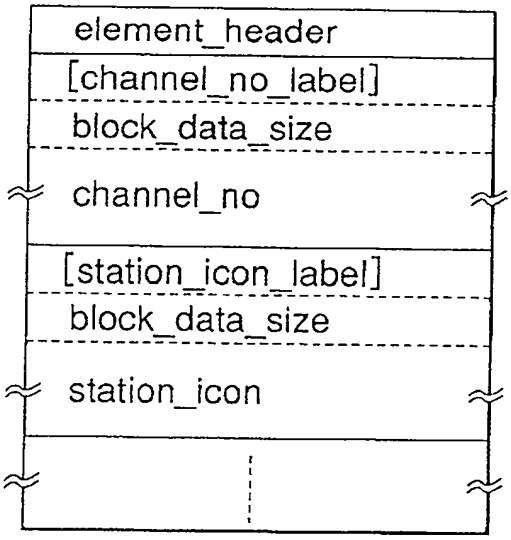

FIG.27

⟨element_tag⟩··· ⟨character_data_tag⟩

[element_block_label]	element_block_data	element_block_kind	data
channel_no_label	character_no	ID	ID Allocated in Unit of Character
character_name_label	character_name	text	Name of Character
character_age_label	character_age	volue	Age
character_profile_label	character_profile	text	Profile
relational_character_label	character_no	ID	character_no of Character Related to Character
relational_picture_label	picture_no	ID	picture_no of Picture Related to Character
relational_sound_label	sound_no	ID	sound_no of Sound Related to Character
relational_movie_label	movie_no	ID	movie_no of Movie Related to Character

FIG.28A

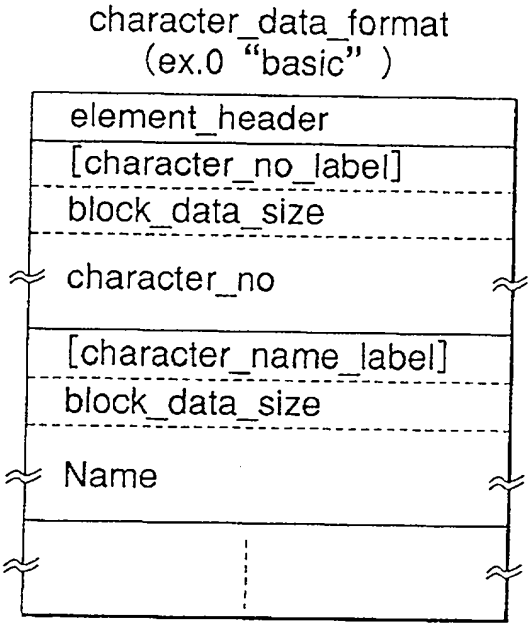

FIG.28B

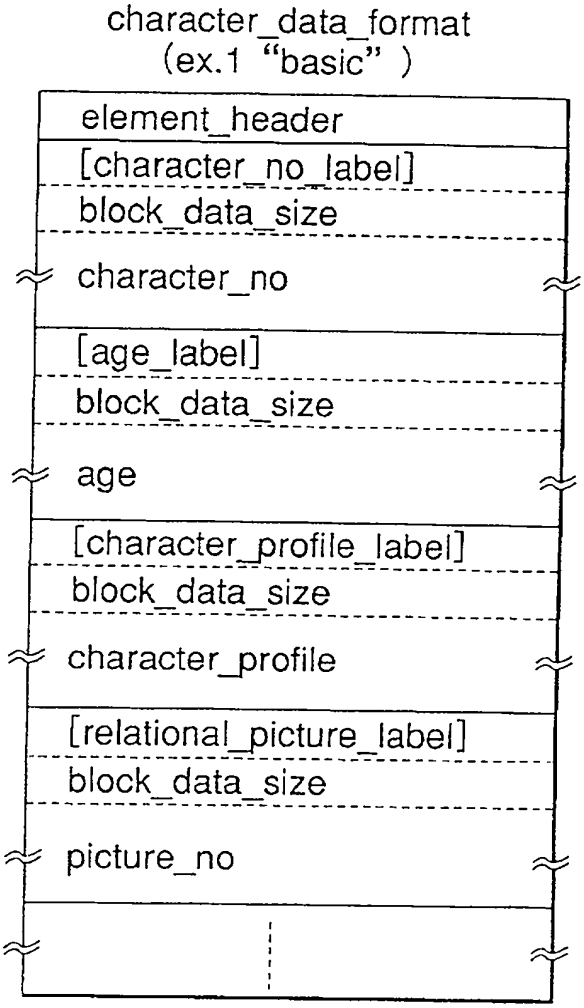

FIG.29

⟨element_tag⟩··· ⟨text_data_tag⟩

[element_block_label]	element_block_data	element_block_kind	data
text_no_label	text_no	ID	ID Allocated in Unit of Text
text_name_label	text_name	text	Name of Text
text_format	text_format_no	ID	Format ID of Text
relational_program_label	program_no	ID	program_no of Program Related to Text
relational_character_label	character_no	ID	character_no of Character Related to Text
relational_picture_label	picture_no	ID	picture_no of Picture Related to Text
relational_sound_label	sound_no	ID	sound_no of Sound Related to Text
relational_movie_label	movie_no	ID	movie_no of Movie Related to Text

FIG.30

〈element_tag〉···〈picture_data_tag〉

[element_block_label]	element_block_data	element_block_kind	data
picture_no_label	picture_no	ID	ID Allocated in Unit of Picture
picture_name_label	picture_name	text	Name of Picture
picture_format	picture_format_no	ID	Format ID of Picture
relational_program_label	program_no	ID	program_no of Program Related to Picture
relational_character_label	character_no	ID	character_no of Character Related to Picture
relational_picture_label	picture_no	ID	picture_no of Picture Related to Picture
relational_sound_label	sound_no	ID	sound_no of Sound Related to Picture
relational_movie_label	movie_no	ID	movie_no of Movie Related to Picture

FIG.31

〈element_tag〉··· 〈sound_data_tag〉

[element_block_label]	element_block_data	element_block_kind	data
sound_no_label	sound_no	ID	ID Allocated in Unit of Sound
sound_name_label	sound_name	text	Name of Sound
sound_format	sound_format_no	ID	Format ID of Sound
relational_program_label	program_no	ID	program_no of Program Related to Sound
relational_character_label	character_no	ID	character_no of Character Related to Sound
relational_picture_label	picture_no	ID	picture_no of Picture Related to Sound
relational_sound_label	sound_no	ID	sound_no of Sound Related to Sound
relational_movie_label	movie_no	ID	movie_no of Movie Related to Sound

FIG.32

〈element_tag〉··· 〈movie_data_tag〉

[element_block_label]	element_block_data	element_block_kind	data
movie_no_label	movie_no	ID	ID Allocated in Unit of Movie
movie_name_label	movie_name	text	Name of Movie
movie_format	movie_format_no	ID	Format ID of Movie
relational_program_label	program_no	ID	Porogram_no of Program Related to Movie
relational_character_label	character_no	ID	character_no of Character Related to Movie
relational_picture_label	picture_no	ID	picture_no of Picture Related to Movie
relational_sound_label	sound_no	ID	sound_no of Sound Related to Movie
relational_movie_label	movie_no	ID	movie_no of Movie Related to Movie

FIG.33A

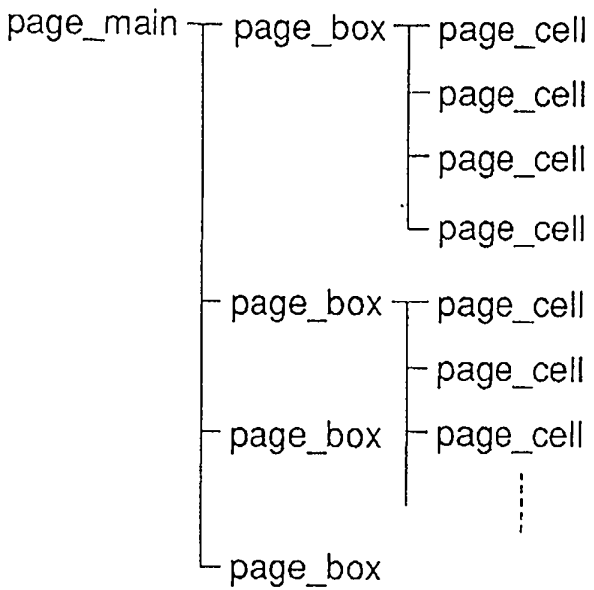

FIG.33B

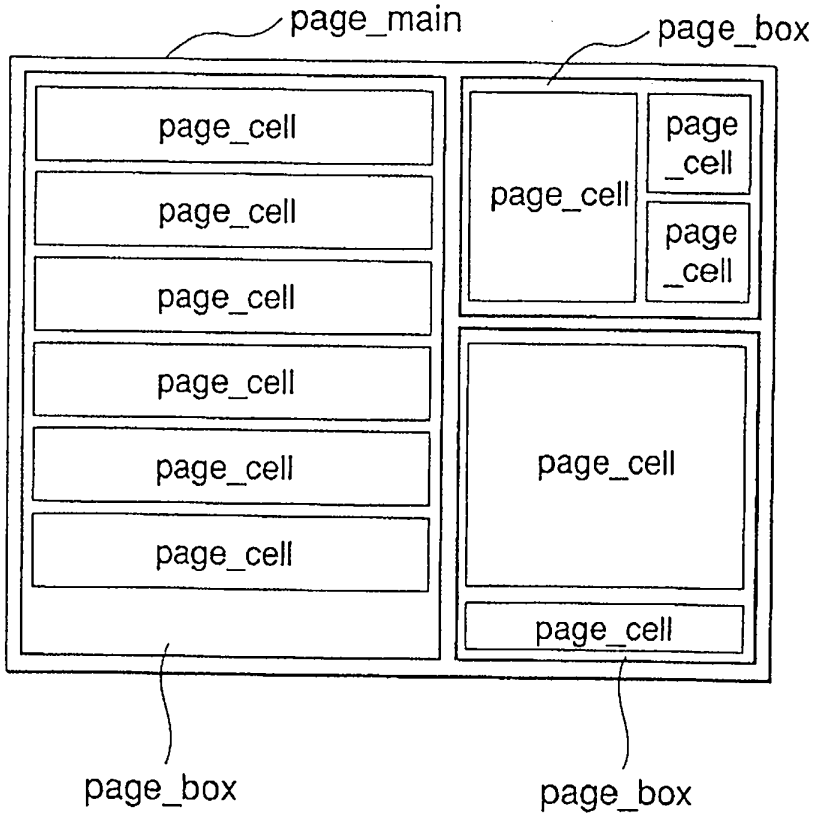

FIG.34A

〈element_tag〉…〈main_layout_tag〉

[element_block_label]	element_block_data	element_block_kind	data
page_no_label	page_no	ID	ID Allocated in Unit of Page to be Displayed
page_name_label	page_name	text	Name of Page
page_position_label	page_position	value	Page Display Position
compose_box_label	box_no	ID	box_no of Box Composing Page

FIG.34B

〈element_tag〉…〈box_layout_tag〉

[element_block_label]	element_block_data	element_block_kind	data
box_no_label	box_no	ID	ID Allocated in Unit of Box
box_name_label	box_name	text	Name of Box
box_position_label	box_position	value	Box Display Position
compose_cell_label	cell_no	ID	cell_no of Cell Composing Box

FIG.34C

〈element_tag〉…〈cell_layout_tag〉

[element_block_label]	element_block_data	element_block_kind	data
cell_no_label	cell_no	ID	ID Allocated in Unit of Cell
cell_name_label	cell_name	text	Name of Cell
cell_position_label	cell_position	value	Cell Display Position
relational_program_no_label	program_no	ID	program_no of Program Related to Cell
relational_channel_no_label	channel_no	ID	channel_no of Channel Related to Cell
relational_character_no_label	character_no	ID	character_no of character Related to Cell
relational_material_no	material_no	ID	material_no of Material Related to Cell

FIG.35

(35-1)

element	block	description
event_data_element		Describe Information on Broadcasting Program
	event_no_block	ID Allocated in Unit of Program
	onAir_time_block	Program Starting Date/Time
	duration_block	Program Broadcasting Duration
	onAir_channel_block	channel_no of Channel in Which Program is Broadcasted
	category_block	category_no of Program Category
	eventType_block	type_no of Program Type
	main_title_block	Main Title of Program
	sub_title_block	Sub-Title of Program
	1st_detail_block	Contents of Program
	2nd_detail_block	(Detail) Contents of Program
	relational_program_no_block	program_no of Related Program
	relational_character_block	character_no of Related Character (Cast)
	relational_material_block	material_no of Related Material
	relational_company_block	company_no of Related Company (Sponsor)
	relational_text_block	text_no of Related Text
	relational_picture_block	picture_no of Related Picture
	relational_sound_block	sound_no of Related Sound
	relational_movie_block	movie_no of Related Movie
channel_data_element		Describe Information on Broadcasting Station
	channel_no_block	ID Allocated in Unit of Channel
	station_name_block	Name of Broadcasting Station
	station_icon_block	station_icon of Broadcasting Station
	relational_program_no_block	program_no of Related Program
	relational_character_block	character_no of Related Character
	relational_material_block	material_no of Related Material
	relational_company_block	company_no of Related Company
	relational_text_block	text_no of Related Text
	relational_picture_block	picture_no of Related Picture
	relational_sound_block	sound_no of Related Sound
	relational_movie_block	movie_no of Related Movie
character_data_element		Describe Information on Character
	character_no_block	IDAllocated in Unit of Character
	character_name_block	Name of Character
	character_age_block	Age
	character_profile_block	Profile
	relational_program_no_block	program_no of Related Program
	relational_character_block	character_no of Related Character
	relational_material_block	material_no of Related Material
	relational_company_block	company_no of Related Company
	relational_text_block	text_no of Related Text
	relational_picture_block	picture_no of Related Picture
	relational_sound_block	sound_no of Related Sound
	relational_movie_block	movie_no of Related Movie

FIG.36

(35-2)

element	block	description
material_data_element		Describe Information on Material
	material_no_block	ID Allocated in Unit of Material
	material_name_block	Name of Material
	relational_program_no_block	program_no of Related Program
	relational_character_block	character_no of Related Character
	relational_material_block	material_no of Related Material
	relational_company_block	company_no of Related Company
	relational_text_block	text_no of Related Text
	relational_picture_block	picture_no of Related Picture
	relational_sound_block	sound_no of Related Sound
	relational_movie_block	movie_no of Related Movie
company_data_element		Describe Information on Company
	company_no_block	ID Allocated in Unit of Company
	company_name_block	Name of Company
	relational_program_no_block	program_no of Related Program
	relational_character_block	character_no of Related Character
	relational_material_block	material_no of Related Material
	relational_company_block	company_no of Related Company
	relational_text_block	text_no of Related Text
	relational_picture_block	picture_no of Related Picture
	relational_sound_block	sound_no of Related Sound
	relational_movie_block	movie_no of Related Movie
text_data_element		Describe Information on Text
	text_no_block	ID Allocated in Unit of Text
	text_name_block	Name of Text
	text_format_block	Format ID of Text
	relational_program_no_block	program_no of Related Program
	relational_character_block	character_no of Related Character
	relational_material_block	material_no of Related Material
	relational_company_block	company_no of Related Company
	relational_text_block	text_no of Related Text
	relational_picture_block	picture_no of Related Picture
	relational_sound_block	sound_no of Related Sound
	relational_movie_block	movie_no of Related Movie
picture_data_element		Describe Information on Picture
	picture_no_block	ID Allocated in Unit of Picture
	picture_name_block	Name of Picture
	picture_format_block	Format ID of Picture
	relational_program_no_block	program_no of Related Program
	relational_character_block	character_no of Related Character
	relational_material_block	material_no of Related Material
	relational_company_block	company_no of Related Company
	relational_text_block	text_no of Related Text
	relational_picture_block	picture_no of Related Picture
	relational_sound_block	sound_no of Related Sound
	relational_movie_block	movie_no of Related Movie

FIG.37

(35-3)

element	block	description
sound_data_element		Describe Information on Sound
	sound_no_block	ID Allocated in Unit of Sound
	sound_name_block	Name of Sound
	sound_format_block	Format ID of Sound
	relational_program_no_block	program_no of Related Program
	relational_character_block	character_no of Related Character
	relational_material_block	material_no of Related Material
	relational_company_block	company_no of Related Company
	relational_text_block	text_no of Related Text
	relational_picture_block	picture_no of Related Picture
	relational_sound_block	sound_no of Related Sound
	relational_movie_block	movie_no of Related Movie
movie_data_element		Describe Information on Movie
	movie_no_block	ID Allocated in Unit of Movie
	movie_name_block	Name of Movie
	movie_format	Format ID of Movie
	relational_program_no_block	program_no of Related Program
	relational_character_block	character_no of Related Character
	relational_material_block	material_no of Related Material
	relational_company_block	company_no of Related Company
	relational_text_block	text_no of Related Text
	relational_picture_block	picture_no of Related Picture
	relational_sound_block	sound_no of Related Sound
	relational_movie_block	movie_no of Related Movie

FIG.38

element	block	description
main_layout_element		Describe Information on Main Screen
	page_no_block	ID Allocated in Unit of Page to be Displayed
	page_name_block	Name of Page
	page_position_block	Page Display Position
	compose_box_block	box_no of Box Composing Page
box_layout_element		Describe Information on Box Screen
	box_no_block	ID Allocated in Unit of Box
	box_name_block	Name of Box
	box_position_block	Box Display Position
	compose_cell_block	cell_no of Cell Composing Box
cell_layout_element		Describe Information on Cell Screen
	cell_no_block	ID Allocated in Unit of Cell
	cell_name_block	Name of Cell
	cell_position_block	Cell Display Position
	contents_element_block	Type of contents_element to be Displayed in Cell
	contents_id_block	ID of contents_element to be Displayed in Cell
main_operation_element		Describe Information for Controlling Main Screen
box_operation_element		Describe Information for Controlling Box Screen
cell_operation_element		Describe Information for Controlling Cell Screen

FIG.39

element	block	description
list_management_element		Describe Information on Program List
	list_no_block	ID Allocated in Unit of Program List
	list_time_block	Data of Program List
	event_no_block	ID Allocated in Unit of Program
	onAir_time_block	Program Starting Date/Time

DECLARATION FOR PATENT APPLICATION (JOINT OR SOLE)
(Under 37 CFR § 1.63; with Power of Attorney)
FROMMER LAWRENCE & HAUG LLP

FLH File No. 450100-4521

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention ENTITLED:

TRANSMITTER SYSTEM AND TRANSMITTING METHOD, RECEIVER SYSTEM AND RECEIVING METHOD AND TRANSMISSION MEDIA

the specification of which

__X__ is attached hereto.

_____ was filed on _____ as Application Serial No. _____,

with amendment(s) through _____ (if applicable, give dates).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Sec. 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s) [list additional applications on separate page]:			Priority Claimed:	
Number:	Country:	Filed (Day/Month/Year):	Yes	No
9-193725	Japan	18 July 1997	X	

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Sec. 1.56, which became available between the filing date of the prior application and the national or PCT international filing date of this application:

Prior U.S. Application(s) [list additional applications on separate page]:		
Appln. Ser. Number:	Filed (Day/Month/Year):	Status (patented. pending. abandoned):

I hereby appoint WILLIAM S. FROMMER, Registration No. 25,506, and DENNIS M. SMID, Registration No. 34,930 or their duly appointed associate, my attorneys, with full power of substitution and revocation, to prosecute this application, to make alterations and amendments therein, to file continuation and divisional applications thereof, to receive the Patent, and to transact all business in the Patent and Trademark Office and in the Courts in connection therewith, and specify that all communications about the application are to be directed to the following correspondence address:

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(212) 588-0800
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WILLIAM S. FROMMER

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Note: In order to qualify for reduced fees available to Small Entities, each inventor and any other individual or entity having rights to the invention must also sign an appropriate separate "Verified Statement (Declaration) Claiming [or Supporting a Claim by Another for] Small Entity Status" form [e.g. for Independent Inventor, Small Business Concern, Nonprofit Organization, individual Non-Inventor].

Note: A post office address must be provided for each inventor.